WALLABICORIS, NEW GENUS (HEMIPTERA: MIRIDAE: PHYLINAE: PHYLINI) FROM AUSTRALIA, WITH THE DESCRIPTION OF 37 NEW SPECIES AND AN ANALYSIS OF HOST ASSOCIATIONS

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BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY
Number 338, 118 pp., 52 figures, 5 tables, 12 plates
Issued June 3, 2010

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ABSTRACT

A new genus, *Wallabicoris*, is described from Australia with 37 included species, all described as new. Host plants for 29 species of *Wallabicoris* are recorded in the families Asteraceae, Boraginaceae, Fabaceae (Papilionoideae), Lamiaceae, Rhamnaceae, Sterculiaceae, and Thymelaeaceae. Maps organized on the basis of host association are presented. A phylogenetic analysis based on 53 morphological characters is presented for all species and seven outgroups. An additional analysis for 25 in-groups and the seven outgroups is presented in which the morphological characters are combined with about 470 bases of 16S mtDNA. These analyses show *Wallabicoris* to be monophyletic, as are several species groups within the genus. Monophyletic groups of species feeding on the Rhamnaceae and Lamiaceae received strong support, suggesting radiations on those plant lineages. Distributional patterns are examined within the context of the larger Australian fauna and with regard to the distributions of host taxa.

INTRODUCTION

The history of fieldwork and publication on Miridae, plant bugs, of Australia is a checkered one. Indeed, the fauna might be thought depauperate judging solely from the literature published as of 1995, with fewer than 200 species listed in the Australian Zoological Catalog (Cassis and Gross, 1995), a mere 2% of the world's fauna. Nonetheless, there is now ample evidence that the Miridae fauna of Australia rivals in diversity that of any other continental area (Cassis et al., 2007; Weirauch, 2007). The present paper—in which *Wallabicoris*, new genus, and its 37 included species are described—is a contribution toward documenting that diversity as part of a Planetary Biodiversity Inventory project funded by the U.S. National Science Foundation.

Wallabicoris belongs to the subfamily Phylinae, a worldwide group of more than 2500 described species. The Phylinae shows its greatest diversity in temperate regions, and particularly those with Mediterranean climates. *Wallabicoris* is here placed in the Phylini, with no presumption that the tribe is monophyletic. This is the largest of the five currently recognized tribes, the only one with a worldwide distribution, and the one that is in need of serious analysis because it lacks diagnostic characters. In a recent paper including the description of 14 new species in three genera, Weirauch (2007) offered the first glimpse into the unique male and female genitalic morphology of some Australian Phylini, observations that will no doubt have a bearing on the future placement of *Wallabicoris* and other yet undescribed genera. Only two other publications have treated Australian Phylinae. The first, by Carvalho and Gross (1982), dealt with the *Leucophoroptera* group (Leucophoropterini), a taxon with a broader Indo-Pacific distribution (Schuh, 1984), but not extending into the Pacific islands; the other, by Malipatil (1992), treated Australian species of *Campylomma* Reuter, a taxon also with an Indo-Pacific distribution, but encompassing the entire Pacific plate (Schuh, 1984).

Unlike *Campylomma*, *Wallabicoris* and the genera treated by Weirauch (2007) are endemic to Australia. Also unlike *Campylomma*, all species of *Wallabicoris* appear to show strong host specificity and are known to feed on a restricted set of plant taxa. One aim of this paper is to enquire into the nature of host-plant relationships in *Wallabicoris* as a way of understanding whether patterns of host association are in agreement with the pattern of phylogenetic relationships within the taxon.

If the pattern of host association is not random in *Wallabicoris*, neither is the pattern of bug distributions. Although we have sampled the southern half of the Australian continent more thoroughly than the remainder, our approach to sampling plant groups is not geographically biased. The results strongly suggest that *Wallabicoris* shows its greatest diversity in temperate Australia, and particularly in the southwest. Most species appear to be univoltine and to make their appearance as adults during the Australian springtime, in accordance with life-history traits seen in the Phylinae in other temperate regions of the world.

During the course of this project more than 4500 specimens were examined. All but about 300 of those were collected as a result of fieldwork initiated by Gerasimos Cassis and Randall Schuh in 1995. Host data are available for 29 of the 37 species of *Wallabicoris*, data for 27 species having been collected by Cassis and Schuh. These numbers are stark evidence of the need for additional collecting of Miridae in Australia using techniques that are suited to the task. We have little doubt that the numbers of *Wallabicoris* species will be increased with additional effort in the field. The compelling nature of this prediction comes from the fact that most *Wallabicoris* spp. are known from only one, or at most a few, localities (maps 1–4); from the observation that most of the species are recorded from a single host genus and often from a single host species; and from the tremendous still-unsampled diversity of the Australian flora. Thus, increasing known diversity will result primarily from sampling of additional plant taxa, particularly in the families Asteraceae, Lamiaceae, Rhamnaceae, Sterculiaceae, and Thymelaeaceae.

MATERIALS AND METHODS

Species recognition: Species of *Wallabicoris* are diagnosed in the present paper on the basis of morphological characters. For many taxa distinctions rely on consistent, although often subtle, differences in the male genitalia. The nature of variation in *Wallabicoris* is similar to what is seen in *Plagiognathus* Fieber (Schuh, 2001), where differences between species are often difficult to discern and demonstrate, even with carefully executed illustrations. This being the case, accurate identifications may prove difficult without access to some comparative material.

Many *Wallabicoris* species appear to be associated with a single host-plant species or a closely related group of host plants. Host association serves as evidence in support of species identity, but we have always relied on genitalic morphology to make final species determinations. Whereas most of the species we recognize would appear to be allopatric with their apparent closest relatives, this is not always the case; again we rely on genitalic morphology to make the final decisions concerning species identity.

Unique specimen identifiers: During the course of this research project matrix code labels were affixed to the more than 4400 specimens examined, as a way to uniquely identify them; these codes are therefore referred to as "unique specimen identifiers" (USIs). The USI codes, e.g., AMNH_PBI 00094810, are composed of an institution and project code (AMNH_PBI) and a unique number (00094810). USI codes are included in the locality data and in the figures and captions. To reduce the amount of space occupied by the USIs in the material examined sections the prefix (AMNH_PBI) is omitted, except for holotype specimens.

All latitude-longitude data presented in the specimens examined sections are in degrees and decimal parts thereof. Altitude data are treated as metric.

Comments on descriptions: The descriptions in the present paper were generated from a matrix of character data using WinClada (Nixon, 2000) and then underwent additional editing. Several of the characters included are in the form of ratios based on the measurement data presented in table 1. Where size serves to help diagnose a taxon, we have included relevant measurement data in the diagnoses and descriptions.

We have provided a description of females only at the generic level. Although some female specimens can be reliably identified in the absence of association with males, in many cases this is not possible in the absence of other information, such as host association.

Genitalic Nomenclature: Following the theory of Cassis (2008), we have adopted the term *endosoma* for the structure most frequently referred to as the *vesica* in the literature on Miridae. We agree with Cassis that this terminology better reflects concepts of homology within the Heteroptera. We follow the terminology of Forero (2008) in discussing the morphology of the female genitalia.

Habitus and genitalic illustrations: Habitus figures in plates 1–5 are presented to illustrate the relative sizes of the specimens. In most cases the photographed male is the holotype for the taxon. Actual sizes can be

determined from the detailed specimen measurements presented in table 1. Color digital habitus images of the bugs were prepared using a Visionary Digital photomicrographic apparatus with Infinity optics and a Nikon D1 Digital SLR camera.

We examined the genitalia of 141 specimens, including those of females representing six species. Male and female genitalia were dissected after maceration of the pygophore or entire abdomen in potassium hydroxide. Illustrations were prepared using a camera lucida on a Wild M20 compound microscope with the genitalic structures mounted in glycerine jelly. All illustrations were prepared using a 20× objective and are reproduced proportionally so as to indicate relative sizes of structures within and across taxa. The apical half of the endosoma is separately enlarged to better show its detailed structure.

Specimen measurements and ratios: All measurements are in millimeters and were made using a micrometer-driven stage, with micrometer output written directly to a spreadsheet; these are presented for all species in table 1. The descriptions include several ratios taken from these and other measurements that help to judge the shape and proportions of the body or its parts in the various species. The methods for computing these ratios and the abbreviations used in the descriptions are as follows:

ratio length/width, computed by dividing total length (tl) by width of pronotum (wp) with the measurements made as shown in plate 1;
ratio width head (wh)/length head (lh);
ratio interocular distance (iod)/width head (wh); height of eye relative to height of head, indicated by width of gula (hg)/height of eye (he), computed as shown in figure 8A;
ratio length apex strap (lae)/length secondary gonopore (lsg), computed as shown in figure 1
ratio length (lrp)/width right paramere (wrp).

Host-family nomenclature: The host data recorded in this publication come directly from label data captured in a specimen database. Because host-plant identifications were received from botanical specialists in two different institutions, the Western Australian Herbarium, Perth, and the Royal Botanical Garden, Sydney, and because angiosperm classification and nomenclature were undergoing changes during this same period, the original data are not uniform. Most obvious among the inconsistencies is the classification of the Lamiaceae, its close relatives, and segregates. Rather than alter all the original data, we have attempted to present a consistent family-level nomenclature in our summary of host associations, summary of which can be found in table 5. References to host-plant distributions in the species treatments are taken from Australia's Virtual Herbarium (1993–2008).

Designation of paratypes: In most cases we designate as paratypes specimens that represent a confident association of material with the concept for the species. Nonetheless, not all such specimens have been designated as paratypes, as for example, some females belonging to *W. cassisi*, new species, and *W. newcastelii*, new species, cannot be positively associated with males. Other examples include specimens with what we deem to be questionable host associations, those that represent what might be considered distributional anomalies in need of further study, and those from extremely long series.

Deposition of specimens and abbreviations for institutional depositories: Specimens utilized during the course of this study are deposited in the following institutions. Within Australia the permit process is reserved to the states. Following the stipulations of our permits (see Acknowledgments) holotypes are deposited in the states of origin. Paratypes are also deposited in proportion to the conditions of the collecting permits. The preponderance of the remaining material is lodged in the institutions that supported the fieldwork or loaned material for study, with a representative sample of specimens deposited in institutions participating in the Plant Bug Planetary Biodiversity Inventory Project or other institutions of record.

Institutional depositories and the acronyms for them as used in this paper are as follows:

AM Australian Museum, Sydney
AMNH American Museum of Natural History, New York
ANIC Australian National Insect Collection, CSIRO, Canberra

TABLE 1
Measurements of *Wallabicoris* spp.

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
W. baldersoni												
M (*N* = 5)	**Mean**	**5.85**	**3.83**	**0.36**	**0.72**	**0.69**	**0.95**	**0.97**	**1.63**	**0.84**	**0.39**	**1.63**
	SD	0.18	0.09	0.03	0.06	0.03	0.08	0.02	0.07	0.03	0.03	0.14
	Range	0.37	0.21	0.07	0.16	0.09	0.19	0.05	0.17	0.07	0.08	0.32
	Min	5.69	3.74	0.31	0.64	0.64	0.83	0.95	1.54	0.80	0.34	1.51
	Max	6.06	3.95	0.38	0.80	0.73	1.03	0.99	1.71	0.87	0.42	1.83
W. cassisi												
M (*N* = 5)	**Mean**	**4.45**	**3.18**	**0.34**	**0.68**	**0.62**	**0.62**	**1.03**	**1.48**	**0.77**	**0.51**	**1.25**
	SD	0.15	0.11	0.01	0.04	0.01	0.03	0.04	0.04	0.01	0.02	0.11
	Range	0.40	0.23	0.04	0.11	0.03	0.08	0.11	0.09	0.03	0.05	0.27
	Min	4.25	3.08	0.33	0.65	0.61	0.58	0.96	1.44	0.76	0.48	1.07
	Max	4.65	3.31	0.37	0.76	0.64	0.66	1.07	1.53	0.79	0.53	1.34
W. chrysocephali												
M (*N* = 5)	**Mean**	**5.40**	**3.62**	**0.26**	**0.69**	**0.65**	**0.88**	**0.92**	**1.53**	**0.77**	**0.43**	**1.45**
	SD	0.24	0.07	0.02	0.05	0.04	0.12	0.03	0.04	0.04	0.03	0.06
	Range	0.49	0.17	0.06	0.12	0.11	0.30	0.07	0.11	0.09	0.07	0.14
	Min	5.18	3.51	0.24	0.61	0.58	0.70	0.88	1.50	0.73	0.41	1.40
	Max	5.67	3.68	0.30	0.72	0.69	1.00	0.95	1.60	0.82	0.48	1.54
F (*N* = 5)	**Mean**	**4.98**	**3.59**	**0.39**	**0.73**	**0.64**	**0.71**	**0.92**	**1.53**	**0.82**	**0.48**	**1.55**
	SD	0.21	0.21	0.06	0.03	0.04	0.07	0.04	0.07	0.10	0.01	0.08
	Range	0.55	0.56	0.13	0.08	0.12	0.18	0.09	0.17	0.24	0.04	0.19
	Min	4.67	3.29	0.33	0.69	0.57	0.63	0.86	1.47	0.69	0.46	1.43
	Max	5.22	3.85	0.45	0.77	0.69	0.81	0.95	1.64	0.93	0.49	1.62
W. commoni												
M (*N* = 1)	**Mean**	**5.60**	**3.91**	**0.33**	**0.82**	**0.72**	**0.82**	**1.02**	**1.60**	**0.82**	**0.33**	**1.56**
	SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Range	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Min	5.60	3.91	0.33	0.82	0.72	0.82	1.02	1.60	0.82	0.33	1.56
	Max	5.60	3.91	0.33	0.82	0.72	0.82	1.02	1.60	0.82	0.33	1.56
F (*N* = 2)	**Mean**	**5.28**	**3.68**	**0.27**	**0.76**	**0.72**	**0.77**	**1.00**	**1.66**	**0.83**	**0.45**	**1.44**
	SD	0.09	0.06	0.02	0.02	0.02	0.02	0.01	0.08	0.03	0.01	0.05
	Range	0.13	0.08	0.03	0.03	0.02	0.02	0.02	0.12	0.05	0.02	0.07
	Min	5.22	3.64	0.26	0.75	0.71	0.76	0.99	1.61	0.81	0.44	1.41
	Max	5.34	3.72	0.29	0.78	0.73	0.78	1.00	1.72	0.86	0.46	1.48
W. coolabah												
M (*N* = 2)	**Mean**	**5.45**	**3.78**	**0.34**	**0.74**	**0.69**	**0.86**	**0.85**	**1.52**	**0.79**	**0.41**	**1.53**
	SD	0.23	0.06	0.00	0.02	0.03	0.07	0.01	0.02	0.04	0.02	0.00
	Range	0.32	0.09	0.01	0.03	0.04	0.10	0.01	0.03	0.06	0.02	0.00
	Min	5.29	3.73	0.33	0.72	0.67	0.81	0.84	1.51	0.76	0.39	1.53
	Max	5.61	3.82	0.34	0.75	0.71	0.91	0.86	1.53	0.82	0.42	1.53
W. craspedii												
M (*N* = 1)	**Mean**	**5.20**	**3.43**	**0.31**	**0.65**	**0.60**	**0.84**	**0.86**	**1.43**	**0.75**	**0.36**	**1.22**
	SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Range	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Min	5.20	3.43	0.31	0.65	0.60	0.84	0.86	1.43	0.75	0.36	1.22
	Max	5.20	3.43	0.31	0.65	0.60	0.84	0.86	1.43	0.75	0.36	1.22

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
F (*N* = 2)	**Mean**	**4.82**	**3.48**	**0.37**	**0.67**	**0.59**	**0.69**	**0.92**	**1.53**	**0.80**	**0.45**	**1.27**
	SD	0.06	0.03	0.04	0.05	0.02	0.08	0.02	0.01	0.03	0.00	0.06
	Range	0.09	0.05	0.06	0.06	0.02	0.11	0.03	0.02	0.05	0.00	0.09
	Min	4.78	3.46	0.34	0.64	0.58	0.63	0.91	1.53	0.78	0.45	1.23
	Max	4.87	3.51	0.40	0.70	0.60	0.74	0.94	1.54	0.83	0.45	1.31
W. cuneotinctus												
M (*N* = 5)	**Mean**	**4.03**	**2.69**	**0.23**	**0.56**	**0.54**	**0.59**	**0.81**	**1.30**	**0.66**	**0.36**	**1.02**
	SD	0.22	0.17	0.07	0.06	0.03	0.04	0.02	0.07	0.03	0.01	0.05
	Range	0.50	0.40	0.16	0.14	0.07	0.11	0.06	0.15	0.07	0.02	0.13
	Min	3.86	2.56	0.18	0.50	0.51	0.55	0.79	1.25	0.62	0.35	0.96
	Max	4.36	2.95	0.35	0.64	0.58	0.66	0.85	1.39	0.69	0.37	1.09
F (*N* = 5)	**Mean**	**3.98**	**2.69**	**0.24**	**0.58**	**0.53**	**0.61**	**0.81**	**1.37**	**0.70**	**0.40**	**1.05**
	SD	0.12	0.09	0.07	0.04	0.02	0.02	0.02	0.07	0.04	0.01	0.04
	Range	0.26	0.19	0.16	0.09	0.04	0.03	0.04	0.17	0.11	0.04	0.12
	Min	3.83	2.58	0.18	0.56	0.51	0.60	0.79	1.30	0.65	0.38	0.99
	Max	4.10	2.77	0.35	0.65	0.55	0.63	0.83	1.47	0.76	0.42	1.10
W. dicrastyli												
M (*N* = 5)	**Mean**	**5.41**	**3.71**	**0.30**	**0.74**	**0.78**	**0.81**	**1.08**	**1.84**	**0.92**	**0.47**	**1.37**
	SD	0.16	0.09	0.03	0.03	0.02	0.03	0.03	0.23	0.02	0.03	0.05
	Range	0.42	0.22	0.07	0.07	0.05	0.09	0.08	0.56	0.05	0.07	0.14
	Min	5.22	3.61	0.26	0.71	0.75	0.78	1.05	1.69	0.88	0.44	1.31
	Max	5.64	3.83	0.33	0.78	0.80	0.86	1.12	2.25	0.94	0.51	1.45
F (*N* = 5)	**Mean**	**5.31**	**3.72**	**0.28**	**0.75**	**0.76**	**0.75**	**1.07**	**1.79**	**0.93**	**0.52**	**1.37**
	SD	0.12	0.08	0.01	0.04	0.02	0.04	0.03	0.03	0.04	0.02	0.06
	Range	0.29	0.22	0.04	0.10	0.06	0.11	0.09	0.08	0.10	0.05	0.15
	Min	5.15	3.60	0.27	0.70	0.73	0.68	1.03	1.76	0.90	0.49	1.27
	Max	5.43	3.82	0.30	0.79	0.78	0.79	1.12	1.83	1.00	0.54	1.42
W. ellae												
M (*N* = 5)	**Mean**	**5.47**	**3.68**	**0.31**	**0.74**	**0.69**	**0.89**	**1.01**	**1.67**	**0.86**	**0.38**	**1.48**
	SD	0.24	0.14	0.05	0.04	0.03	0.06	0.04	0.07	0.04	0.01	0.03
	Range	0.54	0.34	0.13	0.12	0.07	0.12	0.10	0.17	0.12	0.03	0.08
	Min	5.22	3.48	0.25	0.69	0.66	0.83	0.97	1.62	0.81	0.37	1.46
	Max	5.76	3.82	0.37	0.81	0.73	0.96	1.08	1.79	0.93	0.40	1.54
F (*N* = 5)	**Mean**	**5.29**	**3.64**	**0.29**	**0.76**	**0.68**	**0.82**	**0.98**	**1.77**	**0.90**	**0.46**	**1.40**
	SD	0.10	0.12	0.06	0.03	0.03	0.07	0.03	0.04	0.03	0.01	0.05
	Range	0.26	0.30	0.16	0.08	0.07	0.19	0.07	0.08	0.08	0.03	0.11
	Min	5.21	3.54	0.23	0.73	0.65	0.73	0.96	1.72	0.87	0.45	1.34
	Max	5.46	3.84	0.39	0.81	0.71	0.92	1.03	1.80	0.95	0.47	1.45
W. gingera												
M (*N* = 1)	**Mean**	**6.67**	**4.40**	**0.38**	**0.76**	**0.75**	**1.10**	**0.98**	**1.68**	**0.87**	**0.39**	**1.52**
	SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Range	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Min	6.67	4.40	0.38	0.76	0.75	1.10	0.98	1.68	0.87	0.39	1.52
	Max	6.67	4.40	0.38	0.76	0.75	1.10	0.98	1.68	0.87	0.39	1.52
F (*N* = 4)	**Mean**	**5.10**	**3.63**	**0.36**	**0.71**	**0.63**	**0.73**	**0.96**	**1.57**	**0.81**	**0.44**	**1.37**
	SD	0.10	0.09	0.03	0.01	0.01	0.02	0.03	0.06	0.04	0.03	0.08
	Range	0.21	0.22	0.07	0.03	0.03	0.04	0.07	0.14	0.09	0.06	0.17
	Min	4.96	3.53	0.34	0.70	0.62	0.71	0.92	1.50	0.76	0.41	1.29
	Max	5.18	3.75	0.41	0.73	0.64	0.75	0.98	1.64	0.84	0.47	1.46

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
W. halganii												
M (*N* = 5)	**Mean**	**4.80**	**3.38**	**0.31**	**0.67**	**0.63**	**0.73**	**0.98**	**1.54**	**0.82**	**0.50**	**1.18**
	SD	0.31	0.14	0.05	0.04	0.02	0.05	0.03	0.05	0.03	0.03	0.09
	Range	0.69	0.32	0.14	0.10	0.05	0.14	0.07	0.13	0.07	0.07	0.20
	Min	4.42	3.22	0.24	0.63	0.62	0.66	0.95	1.50	0.78	0.45	1.10
	Max	5.12	3.53	0.37	0.73	0.66	0.80	1.02	1.63	0.85	0.52	1.30
F (*N* = 5)	**Mean**	**4.78**	**3.41**	**0.32**	**0.70**	**0.63**	**0.67**	**1.00**	**1.58**	**0.87**	**0.53**	**1.22**
	SD	0.17	0.09	0.05	0.03	0.05	0.04	0.04	0.07	0.09	0.02	0.05
	Range	0.45	0.24	0.13	0.08	0.11	0.11	0.09	0.17	0.24	0.05	0.11
	Min	4.59	3.28	0.25	0.66	0.58	0.63	0.97	1.49	0.79	0.50	1.14
	Max	5.04	3.52	0.38	0.74	0.69	0.73	1.05	1.66	1.03	0.56	1.25
W. helicrysi												
M (*N* = 5)	**Mean**	**5.23**	**3.53**	**0.21**	**0.65**	**0.70**	**0.82**	**1.05**	**1.60**	**0.81**	**0.41**	**1.46**
	SD	0.10	0.10	0.03	0.03	0.02	0.05	0.02	0.03	0.02	0.04	0.02
	Range	0.27	0.25	0.06	0.06	0.06	0.13	0.04	0.07	0.05	0.10	0.04
	Min	5.06	3.41	0.19	0.62	0.67	0.73	1.02	1.56	0.77	0.38	1.44
	Max	5.33	3.66	0.25	0.68	0.72	0.86	1.07	1.63	0.82	0.47	1.48
F (*N* = 3)	**Mean**	**5.01**	**3.56**	**0.26**	**0.68**	**0.71**	**0.71**	**1.02**	**1.64**	**0.82**	**0.50**	**1.29**
	SD	0.13	0.03	0.05	0.06	0.02	0.06	0.00	0.05	0.03	0.01	0.04
	Range	0.22	0.06	0.09	0.13	0.05	0.10	0.00	0.09	0.06	0.01	0.08
	Min	4.93	3.54	0.21	0.63	0.68	0.65	1.02	1.61	0.79	0.50	1.24
	Max	5.16	3.60	0.30	0.75	0.73	0.75	1.03	1.70	0.85	0.51	1.33
W. lachnostachyos												
M (*N* = 5)	**Mean**	**3.59**	**2.69**	**0.28**	**0.65**	**0.50**	**0.48**	**0.91**	**1.32**	**0.66**	**0.48**	**0.87**
	SD	0.21	0.04	0.07	0.05	0.02	0.08	0.01	0.02	0.03	0.03	0.02
	Range	0.51	0.12	0.17	0.12	0.05	0.16	0.02	0.04	0.07	0.07	0.06
	Min	3.29	2.63	0.20	0.57	0.47	0.40	0.90	1.31	0.63	0.44	0.84
	Max	3.80	2.75	0.37	0.69	0.52	0.56	0.92	1.35	0.69	0.50	0.90
F (*N* = 5)	**Mean**	**3.83**	**2.89**	**0.37**	**0.65**	**0.51**	**0.48**	**0.95**	**1.36**	**0.71**	**0.52**	**0.96**
	SD	0.14	0.13	0.06	0.05	0.02	0.05	0.03	0.06	0.05	0.01	0.06
	Range	0.37	0.34	0.14	0.11	0.05	0.12	0.08	0.15	0.12	0.04	0.18
	Min	3.64	2.66	0.29	0.58	0.48	0.42	0.90	1.25	0.63	0.50	0.86
	Max	4.01	2.99	0.43	0.69	0.53	0.55	0.98	1.40	0.76	0.53	1.04
W. maralinga												
M (*N* = 7)	**Mean**	**4.80**	**3.44**	**0.33**	**0.60**	**0.61**	**0.84**	**0.94**	**1.51**	**0.75**	**0.34**	**1.52**
	SD	0.38	0.14	0.05	0.05	0.02	0.05	0.03	0.12	0.06	0.04	0.10
	Range	1.06	0.38	0.14	0.13	0.08	0.15	0.07	0.43	0.20	0.14	0.27
	Min	4.32	3.22	0.23	0.51	0.56	0.79	0.90	1.38	0.72	0.29	1.39
	Max	5.38	3.60	0.37	0.64	0.64	0.94	0.98	1.81	0.91	0.43	1.66
F (N = 2)	**Mean**	**4.34**	**3.38**	**0.39**	**0.66**	**0.61**	**0.68**	**0.90**	**1.49**	**0.77**	**0.42**	**1.40**
	SD	0.49	0.07	0.01	0.01	0.02	0.02	0.03	0.03	0.05	0.00	0.02
	Range	0.69	0.10	0.01	0.01	0.03	0.02	0.04	0.04	0.07	0.01	0.02
	Min	3.99	3.33	0.38	0.66	0.60	0.66	0.88	1.47	0.73	0.42	1.39
	Max	4.68	3.43	0.39	0.67	0.63	0.69	0.92	1.51	0.81	0.42	1.41
W. newcastelii												
M (*N* = 5)	**Mean**	**4.57**	**3.24**	**0.29**	**0.71**	**0.65**	**0.67**	**0.99**	**1.55**	**0.82**	**0.53**	**1.16**
	SD	0.46	0.33	0.07	0.07	0.07	0.08	0.08	0.14	0.06	0.06	0.14
	Range	1.18	0.87	0.17	0.16	0.17	0.19	0.22	0.38	0.16	0.14	0.37
	Min	4.08	2.86	0.22	0.64	0.58	0.54	0.90	1.41	0.75	0.46	0.96
	Max	5.25	3.73	0.39	0.80	0.75	0.74	1.12	1.79	0.91	0.60	1.33

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
F (*N* = 6)	**Mean**	**4.98**	**3.57**	**0.37**	**0.77**	**0.70**	**0.74**	**1.06**	**1.69**	**0.89**	**0.56**	**1.27**
	SD	0.59	0.43	0.08	0.07	0.07	0.11	0.09	0.16	0.08	0.04	0.22
	Range	1.53	1.15	0.21	0.18	0.19	0.27	0.23	0.45	0.17	0.11	0.56
	Min	4.10	2.88	0.25	0.64	0.58	0.58	0.92	1.41	0.81	0.50	0.98
	Max	5.63	4.04	0.46	0.82	0.78	0.85	1.15	1.85	0.98	0.60	1.54
W. norsemanius												
M (*N* = 2)	**Mean**	**5.55**	**3.56**	**0.31**	**0.63**	**0.62**	**1.00**	**0.92**	**1.45**	**0.75**	**0.38**	**1.43**
	SD	0.06	0.09	0.01	0.05	0.01	0.05	0.01	0.04	0.02	0.02	0.00
	Range	0.08	0.13	0.02	0.06	0.01	0.07	0.02	0.06	0.03	0.03	0.00
	Min	5.51	3.50	0.30	0.60	0.61	0.97	0.91	1.42	0.74	0.37	1.42
	Max	5.59	3.63	0.32	0.67	0.62	1.04	0.93	1.48	0.77	0.40	1.43
W. olearii												
M (*N* = 5)	**Mean**	**5.31**	**3.65**	**0.26**	**0.63**	**0.73**	**0.79**	**1.09**	**1.71**	**0.88**	**0.49**	**1.20**
	SD	0.12	0.11	0.04	0.07	0.01	0.04	0.04	0.04	0.03	0.04	0.67
	Range	0.27	0.27	0.09	0.16	0.03	0.12	0.11	0.10	0.06	0.12	1.59
	Min	5.17	3.52	0.21	0.54	0.71	0.74	1.03	1.65	0.85	0.44	0.00
	Max	5.43	3.79	0.30	0.71	0.74	0.86	1.14	1.75	0.92	0.56	1.59
F (*N* = 5)	**Mean**	**5.04**	**3.62**	**0.30**	**0.68**	**0.71**	**0.70**	**1.11**	**1.82**	**0.90**	**0.57**	**1.39**
	SD	0.14	0.13	0.06	0.11	0.03	0.04	0.02	0.03	0.04	0.03	0.03
	Range	0.34	0.32	0.16	0.26	0.07	0.10	0.06	0.08	0.09	0.06	0.08
	Min	4.90	3.44	0.22	0.59	0.68	0.65	1.09	1.78	0.85	0.54	1.34
	Max	5.23	3.75	0.38	0.85	0.75	0.75	1.15	1.85	0.94	0.61	1.42
W. ozothamni												
M (*N* = 10)	**Mean**	**5.18**	**3.46**	**0.28**	**0.73**	**0.68**	**0.83**	**1.02**	**1.59**	**0.81**	**0.39**	**1.37**
	SD	0.24	0.12	0.04	0.07	0.02	0.08	0.02	0.05	0.04	0.01	0.05
	Range	0.69	0.36	0.12	0.23	0.07	0.22	0.08	0.17	0.12	0.04	0.13
	Min	4.89	3.33	0.21	0.62	0.65	0.69	0.99	1.50	0.74	0.37	1.32
	Max	5.58	3.69	0.34	0.85	0.72	0.91	1.07	1.67	0.86	0.41	1.45
F (*N* = 8)	**Mean**	**5.01**	**3.45**	**0.28**	**0.72**	**0.71**	**0.76**	**1.03**	**1.69**	**0.86**	**0.47**	**1.32**
	SD	0.12	0.08	0.04	0.03	0.02	0.11	0.02	0.05	0.05	0.02	0.03
	Range	0.41	0.25	0.12	0.09	0.06	0.37	0.07	0.15	0.14	0.05	0.08
	Min	4.76	3.36	0.21	0.66	0.67	0.54	1.00	1.60	0.78	0.45	1.31
	Max	5.17	3.61	0.34	0.75	0.74	0.91	1.07	1.75	0.92	0.50	1.38
W. paradicrastyli												
M (*N* = 5)	**Mean**	**3.83**	**2.68**	**0.24**	**0.57**	**0.57**	**0.55**	**0.90**	**1.39**	**0.74**	**0.50**	**0.87**
	SD	0.19	0.11	0.04	0.04	0.03	0.02	0.02	0.05	0.03	0.03	0.04
	Range	0.50	0.27	0.10	0.09	0.06	0.04	0.05	0.12	0.07	0.07	0.08
	Min	3.65	2.58	0.21	0.52	0.54	0.53	0.88	1.34	0.70	0.46	0.83
	Max	4.15	2.85	0.31	0.61	0.60	0.57	0.94	1.46	0.78	0.53	0.91
F (*N* = 5)	**Mean**	**4.19**	**2.95**	**0.29**	**0.60**	**0.61**	**0.59**	**0.97**	**1.53**	**0.81**	**0.55**	**0.98**
	SD	0.21	0.14	0.03	0.03	0.02	0.05	0.04	0.08	0.04	0.04	0.09
	Range	0.56	0.34	0.06	0.07	0.06	0.12	0.09	0.18	0.09	0.09	0.23
	Min	3.85	2.74	0.26	0.58	0.58	0.51	0.91	1.44	0.75	0.50	0.82
	Max	4.40	3.08	0.32	0.64	0.64	0.63	1.00	1.62	0.83	0.59	1.05
W. pimelei												
M (*N* = 5)	**Mean**	**3.98**	**2.68**	**0.22**	**0.53**	**0.51**	**0.61**	**0.83**	**1.31**	**0.68**	**0.39**	**1.00**
	SD	0.13	0.10	0.03	0.02	0.04	0.04	0.03	0.04	0.04	0.02	0.03
	Range	0.30	0.27	0.09	0.04	0.09	0.10	0.07	0.09	0.09	0.06	0.09
	Min	3.81	2.56	0.19	0.51	0.45	0.56	0.79	1.26	0.64	0.38	0.96
	Max	4.11	2.83	0.27	0.55	0.55	0.66	0.85	1.35	0.73	0.43	1.05

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
F (*N* = 3)	**Mean**	**3.86**	**2.70**	**0.20**	**0.55**	**0.51**	**0.59**	**0.84**	**1.37**	**0.64**	**0.43**	**0.32**
	SD	0.02	0.03	0.04	0.03	0.01	0.02	0.04	0.04	0.02	0.03	0.55
	Range	0.03	0.05	0.07	0.06	0.03	0.04	0.07	0.06	0.03	0.05	0.96
	Min	3.85	2.68	0.18	0.52	0.49	0.58	0.81	1.33	0.62	0.41	0.00
	Max	3.88	2.73	0.25	0.58	0.52	0.62	0.88	1.39	0.65	0.46	0.96
W. pinocchii												
M (*N* = 5)	**Mean**	**4.99**	**3.34**	**0.27**	**0.61**	**0.62**	**0.81**	**0.89**	**1.41**	**0.72**	**0.32**	**1.29**
	SD	0.17	0.08	0.04	0.04	0.02	0.04	0.01	0.02	0.01	0.01	0.07
	Range	0.44	0.19	0.09	0.10	0.06	0.09	0.02	0.06	0.02	0.03	0.18
	Min	4.76	3.24	0.23	0.55	0.59	0.77	0.88	1.39	0.71	0.30	1.21
	Max	5.21	3.43	0.32	0.65	0.65	0.86	0.90	1.44	0.73	0.33	1.39
F (*N* = 5)	**Mean**	**4.60**	**3.15**	**0.24**	**0.57**	**0.61**	**0.72**	**0.88**	**1.46**	**0.74**	**0.36**	**1.17**
	SD	0.07	0.08	0.03	0.06	0.02	0.03	0.02	0.03	0.03	0.02	0.02
	Range	0.18	0.19	0.06	0.13	0.05	0.09	0.05	0.08	0.07	0.04	0.06
	Min	4.51	3.04	0.21	0.51	0.59	0.68	0.85	1.43	0.71	0.34	1.15
	Max	4.69	3.23	0.28	0.63	0.63	0.77	0.90	1.50	0.78	0.38	1.21
W. pityrodiellus												
M (*N* = 8)	**Mean**	**5.31**	**3.66**	**0.29**	**0.69**	**0.74**	**0.87**	**1.04**	**1.73**	**0.91**	**0.49**	**1.36**
	SD	0.48	0.28	0.06	0.09	0.06	0.09	0.05	0.12	0.06	0.02	0.10
	Range	1.52	0.92	0.16	0.29	0.19	0.30	0.12	0.35	0.17	0.06	0.30
	Min	4.50	3.15	0.19	0.52	0.64	0.69	0.98	1.53	0.81	0.45	1.23
	Max	6.02	4.07	0.35	0.81	0.82	0.99	1.10	1.88	0.98	0.51	1.53
F (*N* = 6)	**Mean**	**5.37**	**3.77**	**0.30**	**0.79**	**0.72**	**0.83**	**1.08**	**1.83**	**0.95**	**0.53**	**1.41**
	SD	0.18	0.17	0.04	0.07	0.08	0.03	0.04	0.05	0.05	0.03	0.06
	Range	0.49	0.52	0.12	0.17	0.22	0.09	0.10	0.14	0.14	0.10	0.16
	Min	5.21	3.55	0.24	0.71	0.57	0.79	1.04	1.75	0.90	0.46	1.34
	Max	5.70	4.07	0.36	0.87	0.79	0.87	1.14	1.88	1.04	0.56	1.50
W. pityrodii												
M (*N* = 5)	**Mean**	**5.28**	**3.75**	**0.39**	**0.76**	**0.72**	**0.79**	**0.97**	**1.67**	**0.89**	**0.43**	**1.36**
	SD	0.14	0.12	0.06	0.06	0.02	0.05	0.03	0.03	0.04	0.02	0.08
	Range	0.33	0.29	0.17	0.17	0.06	0.11	0.08	0.09	0.11	0.05	0.19
	Min	5.13	3.59	0.30	0.66	0.71	0.72	0.92	1.61	0.84	0.40	1.29
	Max	5.46	3.88	0.47	0.83	0.76	0.83	1.00	1.70	0.95	0.45	1.49
F (*N* = 5)	**Mean**	**5.10**	**3.67**	**0.38**	**0.74**	**0.72**	**0.74**	**0.97**	**1.67**	**0.90**	**0.48**	**1.33**
	SD	0.23	0.21	0.07	0.06	0.05	0.06	0.03	0.09	0.05	0.02	0.09
	Range	0.55	0.53	0.18	0.13	0.12	0.14	0.06	0.21	0.13	0.04	0.23
	Min	4.87	3.43	0.26	0.65	0.66	0.68	0.94	1.59	0.84	0.47	1.22
	Max	5.41	3.96	0.44	0.78	0.78	0.82	1.00	1.79	0.97	0.51	1.45
W. pomaderri												
M (*N* = 3)	**Mean**	**3.92**	**2.53**	**0.15**	**0.54**	**0.50**	**0.62**	**0.76**	**1.32**	**0.63**	**0.32**	**0.98**
	SD	0.09	0.05	0.02	0.02	0.03	0.04	0.00	0.03	0.02	0.01	0.01
	Range	0.16	0.08	0.04	0.04	0.06	0.07	0.01	0.04	0.04	0.02	0.01
	Min	3.86	2.48	0.12	0.52	0.47	0.58	0.76	1.30	0.60	0.31	0.98
	Max	4.03	2.57	0.16	0.56	0.53	0.65	0.76	1.34	0.64	0.34	0.99
F (*N* = 5)	**Mean**	**3.87**	**2.56**	**0.18**	**0.57**	**0.53**	**0.60**	**0.75**	**1.34**	**0.68**	**0.36**	**0.89**
	SD	0.08	0.07	0.02	0.04	0.01	0.02	0.02	0.01	0.01	0.00	0.04
	Range	0.22	0.16	0.04	0.12	0.03	0.04	0.04	0.02	0.03	0.01	0.10
	Min	3.78	2.48	0.15	0.50	0.51	0.57	0.73	1.33	0.66	0.36	0.83
	Max	4.00	2.63	0.19	0.62	0.54	0.62	0.77	1.36	0.69	0.37	0.92

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
W. prostantheri												
M (*N* = 5)	**Mean**	**4.70**	**2.99**	**0.23**	**0.59**	**0.58**	**0.81**	**0.85**	**1.37**	**0.71**	**0.42**	**1.18**
	SD	0.53	0.32	0.02	0.06	0.07	0.11	0.04	0.15	0.09	0.02	0.13
	Range	1.12	0.63	0.05	0.14	0.15	0.23	0.09	0.32	0.20	0.05	0.30
	Min	4.19	2.72	0.20	0.53	0.50	0.71	0.80	1.22	0.62	0.41	1.08
	Max	5.31	3.35	0.25	0.67	0.65	0.93	0.90	1.54	0.82	0.45	1.38
F (*N* = 5)	**Mean**	**4.56**	**3.05**	**0.25**	**0.59**	**0.60**	**0.75**	**0.91**	**1.50**	**0.75**	**0.48**	**1.16**
	SD	0.17	0.10	0.02	0.07	0.05	0.05	0.03	0.08	0.04	0.01	0.07
	Range	0.46	0.25	0.05	0.17	0.13	0.12	0.08	0.19	0.10	0.04	0.19
	Min	4.37	2.94	0.23	0.48	0.54	0.70	0.88	1.39	0.70	0.46	1.06
	Max	4.83	3.19	0.28	0.65	0.67	0.82	0.95	1.58	0.80	0.50	1.25
W. pultenaei												
M (*N* = 5)	**Mean**	**3.42**	**2.37**	**0.27**	**0.50**	**0.44**	**0.49**	**0.75**	**1.13**	**0.57**	**0.39**	**0.93**
	SD	0.11	0.08	0.05	0.01	0.01	0.03	0.01	0.01	0.01	0.02	0.03
	Range	0.29	0.17	0.12	0.02	0.02	0.09	0.02	0.02	0.04	0.04	0.07
	Min	3.26	2.29	0.21	0.49	0.43	0.44	0.74	1.12	0.54	0.37	0.90
	Max	3.55	2.46	0.32	0.51	0.45	0.53	0.77	1.14	0.58	0.41	0.97
F (*N* = 5)	**Mean**	**3.63**	**2.51**	**0.28**	**0.53**	**0.44**	**0.51**	**0.78**	**1.17**	**0.60**	**0.41**	**1.03**
	SD	0.11	0.10	0.03	0.02	0.01	0.04	0.01	0.02	0.02	0.01	0.04
	Range	0.28	0.24	0.06	0.06	0.03	0.09	0.01	0.05	0.05	0.02	0.10
	Min	3.47	2.36	0.26	0.50	0.43	0.46	0.77	1.14	0.58	0.40	0.96
	Max	3.75	2.61	0.32	0.56	0.46	0.55	0.79	1.19	0.62	0.42	1.06
W. rhamnicola												
M (*N* = 5)	**Mean**	**3.93**	**2.68**	**0.25**	**0.51**	**0.51**	**0.59**	**0.85**	**1.33**	**0.66**	**0.43**	**0.99**
	SD	0.13	0.11	0.04	0.02	0.02	0.02	0.04	0.07	0.03	0.03	0.07
	Range	0.35	0.30	0.09	0.06	0.06	0.05	0.11	0.18	0.08	0.06	0.15
	Min	3.79	2.52	0.21	0.48	0.49	0.56	0.82	1.23	0.62	0.41	0.92
	Max	4.14	2.83	0.30	0.54	0.55	0.61	0.93	1.41	0.71	0.47	1.07
F (*N* = 5)	**Mean**	**4.07**	**2.81**	**0.30**	**0.56**	**0.53**	**0.60**	**0.89**	**1.41**	**0.72**	**0.45**	**1.01**
	SD	0.10	0.07	0.02	0.04	0.02	0.03	0.02	0.05	0.06	0.01	0.03
	Range	0.24	0.16	0.05	0.08	0.04	0.07	0.05	0.12	0.16	0.03	0.07
	Min	3.92	2.74	0.27	0.52	0.52	0.58	0.86	1.34	0.65	0.44	0.98
	Max	4.16	2.90	0.32	0.60	0.55	0.65	0.91	1.46	0.81	0.47	1.05
W. rutidosi												
M (*N* = 9)	**Mean**	**4.87**	**3.42**	**0.29**	**0.63**	**0.62**	**0.74**	**0.92**	**1.45**	**0.74**	**0.36**	**1.51**
	SD	0.15	0.05	0.02	0.02	0.02	0.06	0.04	0.04	0.03	0.02	0.08
	Range	0.45	0.15	0.07	0.07	0.06	0.16	0.10	0.13	0.08	0.08	0.25
	Min	4.67	3.34	0.25	0.60	0.60	0.66	0.89	1.39	0.72	0.32	1.37
	Max	5.11	3.48	0.32	0.66	0.65	0.82	0.98	1.52	0.80	0.39	1.62
F (*N* = 9)	**Mean**	**4.77**	**3.46**	**0.32**	**0.66**	**0.64**	**0.67**	**0.92**	**1.54**	**0.78**	**0.46**	**1.57**
	SD	0.27	0.21	0.03	0.06	0.04	0.05	0.04	0.10	0.05	0.02	0.15
	Range	0.72	0.55	0.08	0.18	0.13	0.13	0.14	0.32	0.16	0.07	0.44
	Min	4.37	3.11	0.27	0.55	0.58	0.62	0.84	1.34	0.71	0.42	1.37
	Max	5.09	3.66	0.35	0.73	0.70	0.75	0.98	1.66	0.88	0.49	1.80
W. sandstonensis												
M (*N* = 5)	**Mean**	**4.50**	**3.09**	**0.33**	**0.58**	**0.54**	**0.67**	**0.85**	**1.37**	**0.68**	**0.42**	**1.39**
	SD	0.17	0.09	0.03	0.04	0.02	0.06	0.01	0.03	0.01	0.01	0.04
	Range	0.45	0.21	0.07	0.11	0.05	0.16	0.04	0.06	0.03	0.02	0.09
	Min	4.25	2.97	0.29	0.54	0.51	0.60	0.84	1.34	0.66	0.41	1.34
	Max	4.70	3.18	0.36	0.65	0.56	0.76	0.87	1.40	0.69	0.43	1.43

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
W. schwartzi												
M (*N* = 5)	**Mean**	**5.97**	**3.96**	**0.30**	**0.73**	**0.74**	**1.00**	**1.09**	**1.74**	**0.87**	**0.45**	**1.55**
	SD	0.21	0.17	0.07	0.06	0.02	0.06	0.04	0.07	0.03	0.05	0.09
	Range	0.49	0.38	0.18	0.14	0.04	0.16	0.09	0.15	0.07	0.12	0.22
	Min	5.67	3.74	0.25	0.66	0.72	0.92	1.04	1.65	0.83	0.41	1.47
	Max	6.16	4.11	0.43	0.80	0.76	1.08	1.13	1.80	0.90	0.53	1.69
F (*N* = 5)	**Mean**	**5.32**	**3.70**	**0.30**	**0.75**	**0.72**	**0.84**	**1.08**	**1.78**	**0.86**	**0.54**	**1.38**
	SD	0.29	0.23	0.05	0.06	0.05	0.02	0.05	0.08	0.05	0.05	0.06
	Range	0.66	0.47	0.14	0.16	0.11	0.06	0.11	0.19	0.12	0.14	0.14
	Min	4.96	3.44	0.24	0.67	0.66	0.82	1.03	1.70	0.80	0.48	1.31
	Max	5.62	3.91	0.38	0.84	0.78	0.87	1.13	1.90	0.92	0.61	1.45
W. spyridiellus												
M (*N* = 5)	**Mean**	**4.04**	**2.74**	**0.20**	**0.56**	**0.57**	**0.62**	**0.88**	**1.41**	**0.70**	**0.42**	**1.10**
	SD	0.07	0.07	0.01	0.03	0.00	0.03	0.03	0.03	0.02	0.02	0.04
	Range	0.19	0.17	0.03	0.09	0.00	0.08	0.07	0.07	0.04	0.05	0.10
	Min	3.93	2.64	0.18	0.52	0.57	0.57	0.85	1.37	0.68	0.41	1.05
	Max	4.12	2.82	0.21	0.61	0.57	0.65	0.92	1.45	0.72	0.46	1.15
F (*N* = 5)	**Mean**	**4.32**	**2.98**	**0.27**	**0.63**	**0.60**	**0.66**	**0.92**	**1.56**	**0.78**	**0.48**	**1.18**
	SD	0.14	0.09	0.06	0.06	0.02	0.04	0.04	0.06	0.02	0.01	0.04
	Range	0.35	0.25	0.17	0.14	0.05	0.09	0.09	0.15	0.04	0.04	0.10
	Min	4.19	2.88	0.18	0.57	0.58	0.62	0.89	1.48	0.77	0.47	1.13
	Max	4.54	3.13	0.36	0.70	0.63	0.71	0.98	1.64	0.81	0.50	1.22
W. spyridii												
M (*N* = 5)	**Mean**	**3.69**	**2.54**	**0.23**	**0.51**	**0.49**	**0.58**	**0.82**	**1.25**	**0.63**	**0.41**	**0.96**
	SD	0.07	0.07	0.04	0.01	0.02	0.06	0.02	0.02	0.02	0.01	0.05
	Range	0.18	0.18	0.10	0.02	0.06	0.13	0.05	0.05	0.06	0.03	0.12
	Min	3.64	2.43	0.19	0.50	0.45	0.50	0.80	1.22	0.61	0.40	0.89
	Max	3.82	2.60	0.29	0.52	0.50	0.63	0.85	1.27	0.66	0.43	1.01
F (*N* = 5)	**Mean**	**3.65**	**2.58**	**0.28**	**0.53**	**0.48**	**0.52**	**0.84**	**1.26**	**0.62**	**0.43**	**0.92**
	SD	0.07	0.06	0.02	0.02	0.03	0.03	0.03	0.07	0.02	0.04	0.04
	Range	0.17	0.16	0.04	0.05	0.07	0.08	0.06	0.17	0.04	0.10	0.09
	Min	3.54	2.48	0.26	0.50	0.45	0.48	0.82	1.17	0.59	0.37	0.85
	Max	3.71	2.64	0.31	0.55	0.52	0.57	0.88	1.34	0.64	0.46	0.95
W. tasmanensis												
M (*N* = 5)	**Mean**	**5.83**	**3.84**	**0.31**	**0.77**	**0.74**	**0.94**	**1.08**	**1.74**	**0.90**	**0.52**	**1.46**
	SD	0.42	0.24	0.10	0.08	0.05	0.09	0.00	0.11	0.03	0.03	0.13
	Range	1.21	0.68	0.18	0.18	0.15	0.17	0.05	0.32	0.14	0.06	0.26
	Min	5.14	3.45	0.24	0.66	0.66	0.85	1.04	1.56	0.82	0.49	1.33
	Max	6.35	4.13	0.42	0.84	0.81	1.02	1.10	1.88	0.96	0.55	1.59
F (*N* = 5)	**Mean**	**5.23**	**3.64**	**0.36**	**0.77**	**0.69**	**0.78**	**1.10**	**1.73**	**0.88**	**0.58**	**1.31**
	SD	0.09	0.03	0.02	0.04	0.02	0.05	0.01	0.05	0.02	0.02	0.04
	Range	0.73	0.39	0.07	0.14	0.16	0.22	0.03	0.16	0.19	0.06	0.18
	Min	4.83	3.42	0.32	0.71	0.59	0.65	1.09	1.66	0.77	0.56	1.22
	Max	5.56	3.81	0.39	0.85	0.75	0.87	1.12	1.82	0.96	0.61	1.40
W. thomasii												
M (*N* = 5)	**Mean**	**4.12**	**2.87**	**0.27**	**0.58**	**0.54**	**0.74**	**0.83**	**1.36**	**0.67**	**0.45**	**1.23**
	SD	0.04	0.08	0.05	0.05	0.03	0.24	0.01	0.05	0.02	0.02	0.03
	Range	0.10	0.20	0.14	0.13	0.08	0.58	0.02	0.13	0.06	0.06	0.07
	Min	4.06	2.73	0.20	0.50	0.50	0.58	0.82	1.31	0.65	0.42	1.19
	Max	4.16	2.93	0.34	0.63	0.57	1.16	0.84	1.45	0.71	0.48	1.26

TABLE 1
(Continued)

		Length						Width				
		Body	CunClyp	Head	Pron	Scut	Cun	Head	Pron	Scut	InterOc	AntSeg2
F (*N* = 5)	**Mean**	**4.07**	**2.94**	**0.29**	**0.62**	**0.54**	**0.62**	**0.85**	**1.41**	**0.72**	**0.46**	**1.24**
	SD	0.17	0.10	0.04	0.02	0.02	0.02	0.04	0.06	0.04	0.02	0.08
	Range	0.42	0.24	0.10	0.05	0.05	0.06	0.10	0.17	0.11	0.06	0.20
	Min	3.89	2.81	0.25	0.60	0.51	0.61	0.81	1.33	0.65	0.44	1.16
	Max	4.31	3.05	0.35	0.65	0.57	0.66	0.91	1.50	0.76	0.49	1.35
W. trymalii												
M (*N* = 7)	**Mean**	**4.18**	**2.74**	**0.19**	**0.51**	**0.56**	**0.63**	**0.85**	**1.39**	**0.68**	**0.42**	**1.13**
	SD	0.10	0.07	0.04	0.06	0.02	0.04	0.03	0.03	0.04	0.02	0.04
	Range	0.28	0.20	0.10	0.16	0.06	0.12	0.09	0.10	0.11	0.06	0.11
	Min	4.01	2.69	0.14	0.43	0.53	0.58	0.80	1.36	0.60	0.39	1.06
	Max	4.30	2.89	0.24	0.59	0.59	0.70	0.89	1.46	0.71	0.45	1.17
F (*N* = 1)	**Mean**	**4.39**	**2.93**	**0.25**	**0.61**	**0.58**	**0.69**	**0.89**	**1.48**	**0.70**	**0.49**	**1.20**
	SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Range	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Min	4.39	2.93	0.25	0.61	0.58	0.69	0.89	1.48	0.70	0.49	1.20
	Max	4.39	2.93	0.25	0.61	0.58	0.69	0.89	1.48	0.70	0.49	1.20
W. uptoni												
M (*N* = 3)	**Mean**	**5.58**	**3.63**	**0.31**	**0.68**	**0.60**	**0.97**	**0.84**	**1.50**	**0.75**	**0.35**	**1.45**
	SD	0.05	0.15	0.03	0.06	0.05	0.08	0.01	0.01	0.02	0.03	0.03
	Range	0.10	0.29	0.06	0.11	0.09	0.15	0.01	0.01	0.05	0.05	0.06
	Min	5.52	3.46	0.29	0.62	0.57	0.88	0.83	1.49	0.73	0.32	1.42
	Max	5.62	3.75	0.35	0.74	0.65	1.03	0.84	1.50	0.78	0.37	1.48
W. waitzii												
M (*N* = 5)	**Mean**	**5.59**	**3.81**	**0.33**	**0.64**	**0.67**	**0.93**	**0.90**	**1.47**	**0.77**	**0.34**	**1.53**
	SD	0.21	0.11	0.02	0.03	0.04	0.03	0.03	0.02	0.02	0.01	0.05
	Range	0.58	0.30	0.04	0.07	0.10	0.07	0.07	0.04	0.04	0.03	0.13
	Min	5.27	3.65	0.31	0.62	0.62	0.90	0.87	1.46	0.75	0.33	1.46
	Max	5.85	3.95	0.35	0.69	0.71	0.97	0.94	1.50	0.79	0.36	1.60
F (*N* = 5)	**Mean**	**5.15**	**3.69**	**0.37**	**0.69**	**0.64**	**0.74**	**0.89**	**1.56**	**0.80**	**0.44**	**1.49**
	SD	0.16	0.14	0.03	0.02	0.03	0.02	0.02	0.06	0.03	0.02	0.03
	Range	0.39	0.37	0.07	0.06	0.07	0.06	0.04	0.14	0.08	0.04	0.08
	Min	4.91	3.44	0.33	0.67	0.60	0.71	0.87	1.50	0.75	0.42	1.47
	Max	5.29	3.80	0.40	0.72	0.66	0.77	0.91	1.64	0.84	0.46	1.54

BMNH The Natural History Museum, London
CNC Canadian National Collection of Insects, Ottawa
MVMA Museum of Victoria, Melbourne
NTM Northern Territory Museum, Darwin
SAMA South Australian Museum, Adelaide
UNSW University of New South Wales, Sydney
USNM United States National Museum of Natural History, Smithsonian Institution, Washington, DC
WAMP Western Australian Museum, Perth
ZISP Zoological Institute, Russian Academy of Sciences, St. Petersburg

Wallabicoris, new genus

TYPE SPECIES: *Wallabicoris ozothamni*, new species.

DIAGNOSIS: Recognized by the relatively large size and robust body form, and by the structural details of the male and female genitalia: endosoma with a deep subproximal bend, but never forming a coil, the heavier

(primary) strap terminating in an acute apex extending well beyond the secondary gonopore, a narrow (secondary), sometimes bifurcating or incomplete, strap connecting proximal end of secondary gonopore with body of endosoma; phallotheca L-shaped, apical portion about same length as basal portion, always with broad transparent "window" extending over apical half of posterior surface; left paramere variously developed, frequently greatly elongate, always rowboat shaped and with an elongate posterior process and a sclerotized, triangular anterior process; right paramere weakly to conspicuously elongate, sometimes nearly parallel sided, apically with a short fingerlike process. Overall appearance similar to many *Plagiognathus* Fieber species (Schuh, 2001: figs. 5–14); coloration often pale to yellow, sometimes with a few to many distinct red spots on a pale background (pls. 1–5). Narrow secondary strap of endosoma (e.g., figs 1–7) similar to that found in *Xiphoides* Eyles and Schuh (2003) from New Zealand and an undescribed myrmecomorphic taxon from northwestern Argentina. Partial narrow secondary strap also found in an undescribed Australian taxon near *Xiphoides* used as an outgroup in the present phylogenetic analysis, but endosoma always forming a distinct coil in *Xiphoides* and the last taxon and the right paramere in those taxa always with a conspicuous, long, fingerlike process apically (Eyles and Schuh, 2003: figs. 186, 189, 198, 201). Australian taxon near *Xiphoides* with a variously shaped projection arising from the endosoma at the distal end of the secondary gonopore.

DESCRIPTION: *Male*: Body elongate, ovate to parallel sided, total length 3.65–6.67. COLORATION (pls. 1–5): Often pale to yellow, sometimes with a few to many distinct red spots on a pale background, rarely with solid areas of red and green. SURFACE AND VESTITURE (figs. 8B, 14B, 20B, 24C, 31B, 35B, 39B, 41B, 47B): Dorsum smooth, at most weakly shining, usually with reclining simple setae matching background coloration; dorsum, with or without some sericeous or woolly setae, sometimes with black bristlelike setae, especially on pronotum. STRUCTURE: **Head** (pls. 1–5; figs. 8A, 14A, 20A, 24A, 27A, 31A, 35A, 39A, 41A, 47A): Frequently transverse and barely projecting beyond anterior margin of eye; sometimes elongate and weakly to moderately projecting beyond eye when viewed from above; in lateral view eyes occupying 0.60%–0.85% of height of head. *Labium*: Elongate, slender, extending from base of abdomen to well onto pygophore. *Antennae*: Segment 1 short, constricted basally, segment 2 elongate, slender and parallel sided, segments 3 and 4 about one-half diameter of segment 2. **Thorax:** Pronotum ranging from nearly flat to strongly sloping anteriorly; metathoracic scent gland evaporatory area typical of Phylinae (figs. 8C, 14C, 20C, 24B, 27B, 31C, 35C, 39C, 41C, 47C). *Legs*: Claws elongate, slender, not significantly broadened at base, smoothly curving to sharply angulate; pulvilli moderately fleshy, covering from one-third to one-half of ventral surface of claw; parempodia setiform (figs. 8D, 20D, 24D, 27C, 31D, 35D, 39D, 41D, 47D). **Abdomen** (figs. 8E, 14D, 24F, 31E): Broad basally, weakly tapering toward pygophore. GENITALIA (e.g., figs. 1–7): **Pygophore:** Weakly elongate, deep, not tapered toward apex (figs. 14E, 20E, 27E, 35E, 39E, 41E, 47E). **Endosoma:** With a deep subproxial bend, but never forming a coil, the broader (primary) strap (fig. 1) terminating in an acute apex extending well beyond the secondary gonopore, a slender (secondary), sometimes bifurcating or incomplete strap (fig. 1) connecting proximal end of secondary gonopore with the body of endosoma. **Phallotheca:** L-shaped, apical portion about same length as basal portion, always with a broad transparent "window" on posterior surface (fig. 1) extending from basal region to near apex. **Left Paramere:** Variously developed, frequently greatly elongate, always rowboat shaped and with an elongate posterior process and a sclerotized, triangular anterior process; base of posterior process sometimes conspicuously elevated above level of paramere body. **Right Paramere:** Weakly to conspicuously elongate, sometimes nearly parallel sided, apically with a short fingerlike process.

Female: Elongate ovoid, usually more distinctly so than male, total length 3.71–5.70 (pls. 1–5). COLORATION: As in male. SURFACE AND VESTITURE: As in male. STRUCTURE: **Head:** Eyes smaller than in

male, interocular distance greater; in lateral view eyes occupying a smaller proportion of height of head than in male. *Labium*: As in male. *Antennae*: Segment 2 elongate, more slender than in male, slightly increasing in diameter distally. **Thorax:** As in male. GENITALIA (fig. 33): Posterior wall folded longitudinally on either side of midline, elevated and bearing projections posteriorly (fig. 33), as part of longitudinal folding of wall; posterior wall with distinct outpocketing (swelling) posterolaterally. Vestibular sclerites moderately sclerotized, moderately elongate, exit folded back toward entrance. Sclerotized rings widely separated, weakly infolded laterally.

ETYMOLOGY: A fanciful name derived from *wallaby*, the widespread Australian marsupial, and the Greek *coris*, "bug." Originally coined as a manuscript name by the late J.C.M. Carvalho, who applied it to a small sample of specimens as part of his studies of the Australia Miridae with the late Gordon F. Gross, in the early 1980s.

HOSTS: Known to breed primarily on the plant families Asteraceae, Lamiaceae, and Rhamnaceae, based on the collection of adult and nymphal specimens. Evidence for breeding also exists for plants in the families Boraginaceae, Fabaceae, Sterculiaceae, and Thymelaeaceae, but for lesser numbers of *Wallabicoris* spp.

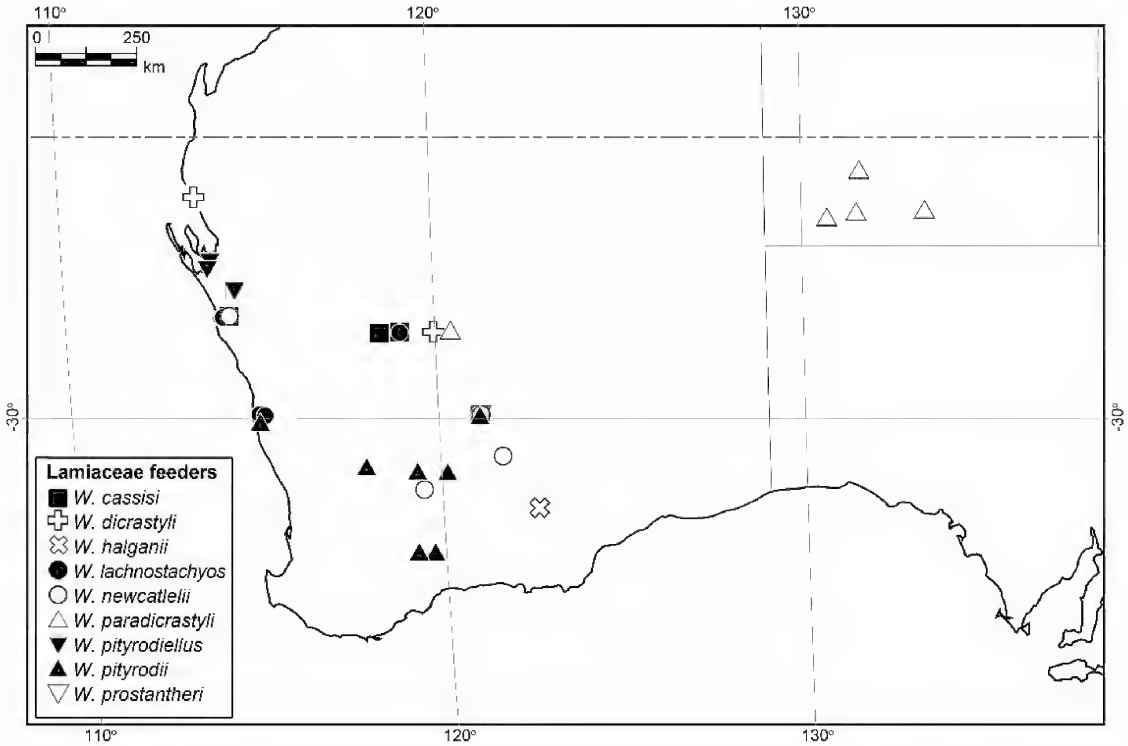
DISTRIBUTION (maps 1–4): Broadly distributed on the southern half of the Australian continent, but with the preponderance of known species recorded from the floristically rich southwest.

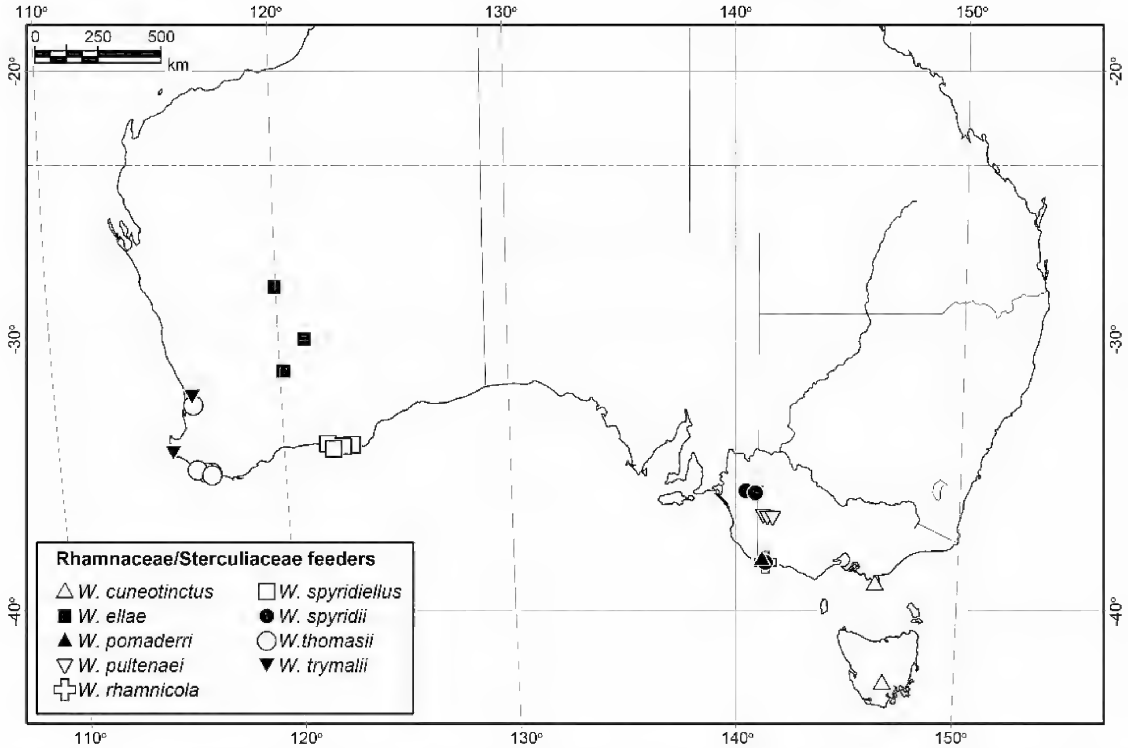
DISCUSSION: ***Characters Supporting the Monophyly of Wallabicoris***: *Wallabicoris* spp. are large to very large within the context of Australian Phylinae and their external morphology is therefore relatively easy to study. It is the male and female genitalia, however, that allow for recognition of a monophyletic group. Whereas the male genitalia are relatively simple, they do possess features distinctive within the Phylinae. They also share some features with other taxa from Australia, New Zealand, and Argentina. Most of the structural features discussed below may be found in a similar form in taxa other than *Wallabicoris*. Nonetheless, taken together these characters present a strong argument for the monophyly of the genus.

Form of narrow secondary strap of endosoma: A narrow (secondary) endosomal strap is seen in *Wallabicoris* (fig. 1), *Xiphoides* from New Zealand, six species of an undescribed genus near *Xiphoides* (Weirauch and Schuh, in press) from southernmost Australia, and an undescribed myrmecomorphic taxon from northwestern Argentina (Weirauch and Schuh, in press). This narrow strap is almost always long in *Wallabicoris*, usually with a submedial undulation (e.g., figs. 1–6), although more rarely it is bifurcating (fig. 7) or incomplete (fig. 36). The strap in *Xiphoides* is also long, but never has the submedial undulation or other modifications, and extends beyond the proximal end of the gonopore rather than being attached to it. The myrmecomorphic Argentine species is structurally similar to many *Wallabicoris* spp., in that the secondary strap is complete and attached proximally to the secondary gonopore, although it lacks the medial undulation. In the undescribed Australian group near *Xiphoides* the distance between the origin of the strap and the secondary gonopore is much shorter and never with an undulation or bifurcation; also there is a long gonopore sclerite (Stonedahl, 1990).

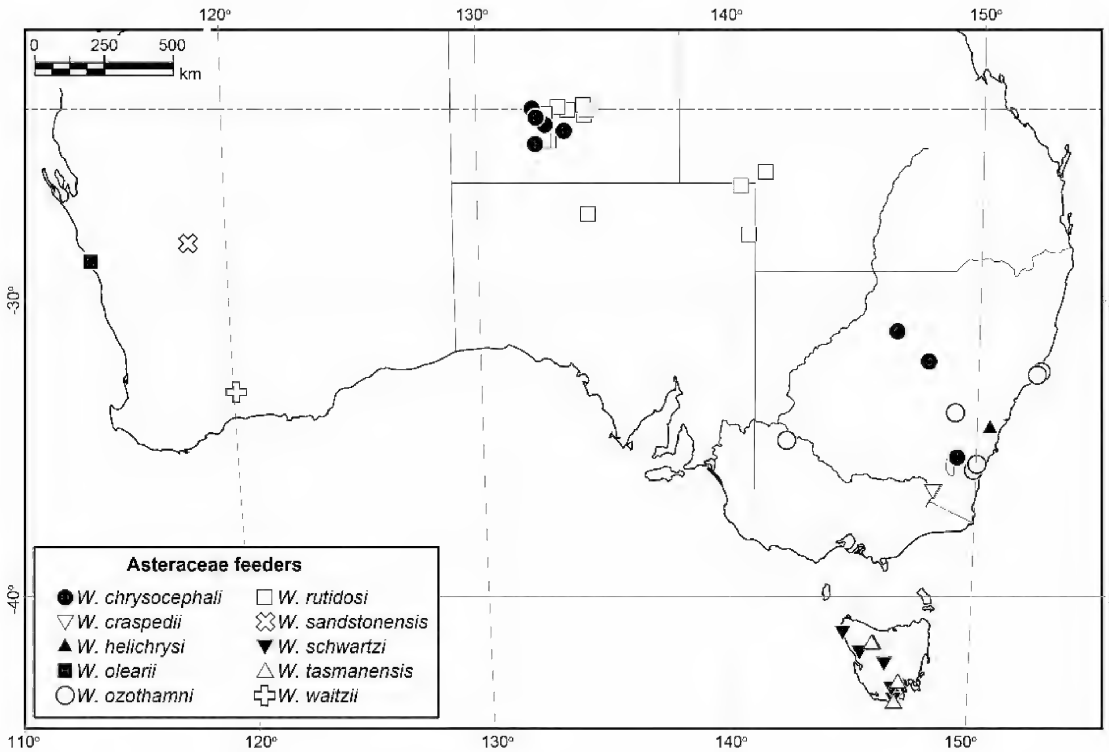
Coiling of the endosoma: All *Wallabicoris* spp. have a strong U-shaped bend in the proximal section of the endosoma (e.g., figs. 1–7). In other genera that might be thought to show a relationship on the basis of the narrow secondary strap, the most similar form of the endsoma is found in the undescribed myrmecomorphic taxon from Argentina mentioned above; in the other previously mentioned taxa from Australia and New Zealand the endosoma always forms a single coil (Eyles and Schuh, 2003: fig. 201), a condition never seen in *Wallabicoris*.

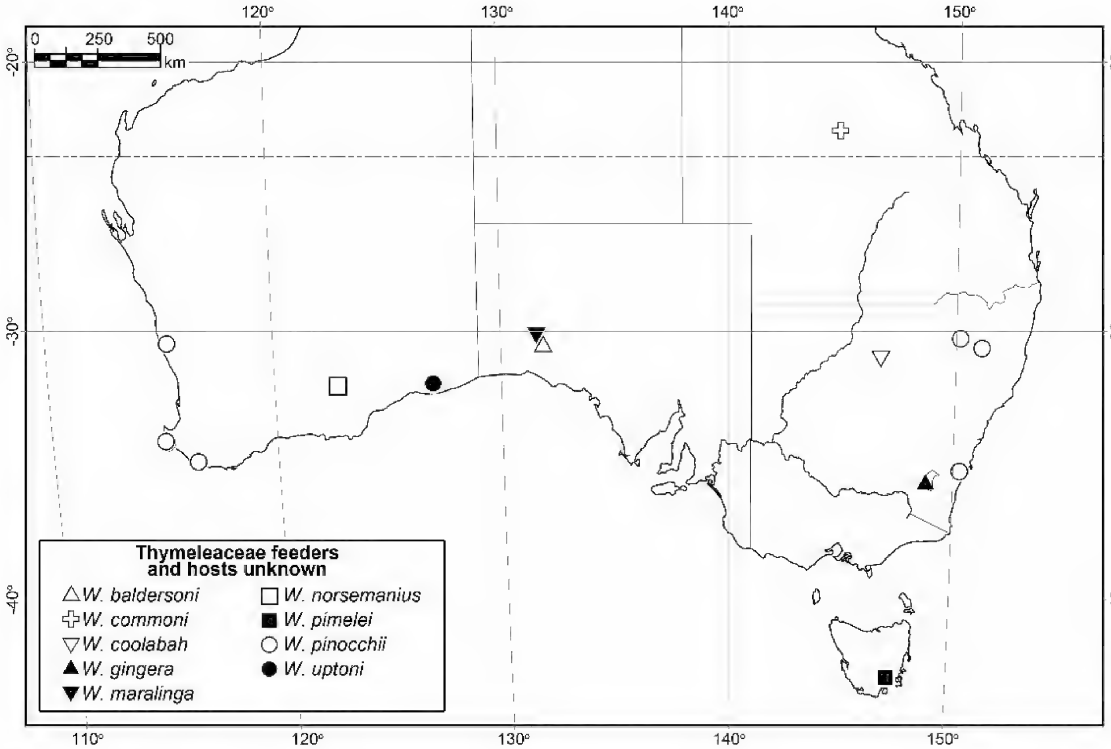
Phallotheca: *Wallabicoris* spp. always have a transparent "window" in the phallotheca (e.g., figs. 1–7). This condition is seen in other taxa with the narrow secondary strap only in the undescribed myrmecomorphic taxon from Argentina. The phallotheca in some *Xiphoides* sp. has a fingerlike projection on the dorsal surface (Eyles and Schuh, 2003: fig. 200), a feature not generally found in taxa





Maps 1 and 2. Distributions of *Wallabicoris* spp. Above, species breeding on Lamiaceae and Boraginaceae. Below, species breeding on Rhamnaceae and Sterculiaceae.





Maps 3 and 4. Distributions of *Wallabicoris* spp. Above, species breeding on Asteraceae. Below, species breeding on Thymeleaceae and of unknown host association.

of Phylinae outside the Pilophorini (Schuh, 1984), although see *Bisulcopsallus* Schuh, *Ceratopsallus* Schuh, and *Stictopsallus* Schuh in the North American *Phymatopsallus* group (Schuh, 2006b).

Left paramere: The left paramere is sometimes much more elongate in *Wallabicoris* spp. than in most other Phylinae, a feature that can be appreciated in undissected specimens by observing the distance the paramere projects beyond the margin of the pygophore (figs. 7, 9, 27F, 28). The attribute is not unique to the group, however, as is evident from the examination of *Moiseevichia leyserae* Schuh from South Africa (Schuh, 2006a: figs. 3, 12), which has a greatly elongate left paramere. There appears to be no single structural detail in the left paramere that can be used to diagnose *Wallabicoris*.

Right paramere: The right paramere is likewise devoid of characteristics obviously distinctive to *Wallabicoris*. It is usually conspicuously elongate, sometimes parallel sided over much of its length (e.g., figs. 1–7), and appearing flattened (fig. 41F), features seen in a similar form in members of the *Phymatopsallus* group from North America (Schuh, 2006b) and in *Moiseevichia*. Nonetheless, *Xiphoides* and the undescribed taxon near *Xiphoides* have a right paramere of a very different conformation from that of *Wallabicoris*, with a broadly ovoid body and a strongly attenuated fingerlike apical process (e.g., Eyles and Schuh, 2003: figs. 170, 179, 186).

Posterior wall of female: Our still-limited survey of female genitalia in the Phylinae, and more particularly the Australian Phylinae, suggests that aspects of the structural details seen in the posterior wall in *Wallabicoris* may be distinctive to the group of Australian genera. Our comments on these—and other female genitalic structures—are based on dissections of the following species: *W. ozothamni*, *W. pinocchii*, *W. pityrodii*, *W. pultenaei* (fig. 33), *W. spyridii*, and *W. waitzii* and a number of yet to be described taxa. Schuh (1974) pointed out that the Pilophorini uniquely possess an evagination dorsally along the posterior margin of the posterior wall, a feature that he treated as synapomorphic for the group. Outside of Australia, current knowledge of female genitalic structures suggests that the posterior wall is simple, although it may be ornamented with fields of spicules and may have embedded in it variously developed interramal sclerites. Nonetheless, as shown by Weirauch (2007), the posterior wall in some Australian Phylinae, especially *Exocarpocoris* Weirauch, may be more elaborately ornamented. In *Wallabicoris* the posterior wall is folded longitudinally on either side of the midline and bears projections posteriorly (fig. 33). These structures are in some ways reminiscent of the dorsal lobes of the interramal sclerites (Forero, 2008: fig. 8; K structures of Slater, 1950; interramal lobes of Schwartz, 2004) seen in the Orthotylini (see also Schaffner and Schwartz, 2008: fig. 19). The resemblance of these structures in the two groups would appear to be superficial, however, as the dorsal lobes in the Orthotylini, according to Forero (2008) and Schaffner and Schwartz, 2008), result from a medial evagination on the posterior margin of the interramal sclerites, whereas in *Wallabicoris*, and at least some other Australian Phylinae, they arise from longitudinal folding of the wall. In addition to the longitudinal folds, the posterior wall also exhibits distinct outpocketing posterolaterally (fig. 33).

Vestibular sclerites in female: It is now well known that many genera of Phylinae possess heavily sclerotized, and sometimes morphologically elaborate, vestibular sclerites (e.g., Henry and Schuh, 1979; Wyniger, 2006; Pluot-Sigwalt and Matocq, 2006; Schuh, 2006b). These sclerites (what M.D. Schwartz [personal commun.] believes to be elaborately modified internal invaginations of the left first gonapophysis) are moderately sclerotized and usually moderately elongate in *Wallabicoris* (fig. 33), as might be predicted by the length of the endosoma, if indeed the lengths of the endosoma and the vestibular sclerites are correlated, as suggested by Pluot and Matocq (2006). It is not clear that there are any unique aspects of structure in the vesitubular sclerites in *Wallabicoris*.

KEY TO THE MALES OF *WALLABICORIS*

1. Dorsum with conspicuous red or carmine (not violet) spots or areas, sometimes coa-

lesced into solid fasciae, on a cream or greenish background; labium always reaching onto abdomen, usually to anterior margin of pygophore or beyond 5

– Dorsum sometimes spots, blotchlike markings, or with fasciae, but these never red or carmine; length of labium variable, often not attaining midpoint of abdomen 2

2. Dorsum with brown spots or violet blotches. 11

– Dorsum without spots or blotches, although sometimes with weakly defined, darker, quadrate areas 3

3. Dorsum either entirely bright yellow, or with strong yellow components 13

– Dorsum not uniformly yellow and usually without strongly yellow components, although sometimes at least partially orange. 4

4. Dorsum mostly chalk white, sometimes with darker shadowed quadrate areas; greasy specimens often appearing yellow to faded orange 18

– Dorsum never chalk white or bright yellow, never with distinct spots although sometimes with large quadrate areas of darker coloration 30

5. Red markings restricted to hemelytron, in the form of solid areas almost completely covering clavus and posterior half of endocorium (pl. 4); head conspicuously porrect (fig. 31A); only known host *Pultenaea tenuifolia* (Fabaceae); western Victoria . . . . . .*pultenaei*

– Red markings occurring on head and pronotum as well as hemelytron, in the form of dots, never forming completely solid areas; head not so strongly porrect; known hosts include spp. of Rhamnaceae and Sterculiaceae; western Victoria 6

6. Transverse fascia on posterior half of corium not reaching to costal margin, usually restricted to endocorium, cuneus entirely cream colored (pl. 5); relatively small species, mean total length 3.69; known hosts restricted to *Spyridium* spp. (Rhamnaceae); southeastern South Australia. . . . . *spyridii*

– Transverse fascia on posterior half of corium reaching to costal margin, covering endo- and exocorium, sometimes almost entire corium covered with red spots, cuneus with at least some read spots; larger species, mean total length at least 3.93–4.18. 7

7. Left paramere short, deep-bodied, and blunt apically (fig. 34); secondary strap of endosoma incomplete, with a large break between proximal end of the secondary gonopore and remaining portion of strap (fig. 34); known hosts included *Pomaderris* spp. (Rhamnaceae); southern Victoria and Tasmania . . . . . *rhamnicola*

– Left paramere longer, not so deep bodied, acuminate apically (figs. 40, 44); secondary strap of endosoma complete, bifuracting submedially (figs. 40, 44); known hosts include Rhamnaceae and Sterculiaceae spp 8

8. Entire dorsum, except membrane, heavily covered with red spots, included anterior half of corium (pl. 5); known hosts include *Thomasia heterophylla* and *Lasiopetalum floribundum* (Sterculiaceae); extreme southwestern Western Australia . . . . . *thomasii*

– Dorsum less extensively covered with red spots, at least anterior half of corium mostly cream colored and devoid of spots; breeds on Rhamnaceae and Sterculiaceae 9

9. Corium with a broad, complete, red-brown, transverse fascia just anterior to cuneal fracture, remainder of dorsum, including all of cuneus and most of clavus, with scattered red spots on a cream background (pl. 5); known host *Spyridium globulosum* (Rhamnaceae); Esperance region, south coast of Western Australia . . . . . *spyridiellus*

– Corium with a more or less complete reddish fascia, but cuneus mostly red except along cuneal fracture, remainder of dorsum more intensely covered with red spots 10

10. Known host *Trymalium floribundum* (Rhamnaceae); extreme southwestern Western Australia . . . . . *trymalii*

– Known host *Pomaderris* spp. (Rhamnaceae); south coast of Victoria . . . . . *cuneotinctus*

11. Dorsum uniformly covered with irregular violet blotches (pl. 2); large species, mean total length 5.47; Western Australia; known host *Keraudrenia integrifolia* (Sterculiaceae) . . . . . *ellae*

– Dorsum with numerous small, brown, circular spots 12

12. Hind tibiae with distinct black bases; pronotum with spots; vestiture of pronotum with heavy, reclining, black setae (pl. 2); known hosts include *Halgania* spp. (Boraginaceae); Western Australia, Goldfields region . . . . . *halganii*

– Hind tibiae without black bases; pronotum without spots (pl. 3); vestiture of pronotum and remainder of dorsum pale; known hosts include *Pityrodia* spp. and *Prostanthera* spp. (Lamiaceae); Western Australia, Shark Bay region . . . . . *pityrodiellus*

13. Dorsum solid bright yellow (pl. 5); body elongate, slender, mean total length 5.59, mean ratio total length/pronotal width 3.80; secondary endosomal strap with a short medial undulation (fig. 48); known host *Wait-*

zia acuminata (Asteraceae); Western Australia: Frank Hann National Park . . . . *waitzii*

– Dorsum not so uniformly and intensely yellow, body not so elongate, mean total length always less than 5.40, usually less than 5.00, mean ratio total length/pronotal width 3.51 or less; secondary vesical strap variable 14

14. Left paramere greatly elongate (fig. 37), extending way beyond margin of pygophore; relatively small for predominantly yellow species, average total length 4.50; secondary endosomal strap with a very broad medial undulation (fig. 34); host unknown; Western Australia: Goldfields region. . . *sandstonensis*

– Left paramere not so elongate, only moderately extending beyond margin of pygophore; larger, average total length 4.87–5.40; secondary endosomal strap variable 15

15. Mean total body length 5.40–5.60. 16

– Mean total body length 4.99 or less; secondary endosomal strap either with a submedial undulation or discontinuous medially . . . 17

16. Head relatively short, declivent, only slightly projecting beyond anterior margin of eyes, ratio head width/head length 3.11 (pl. 1); secondary endosomal strap with a broad subbasal undulation (fig. 4); host unknown; central Queensland . . . . . *commoni*

– Head longer, more strongly projecting beyond anterior margin of eyes, ratio head width/head length 3.49 (pl. 1); secondary endosomal strap with a short, kinklike, submedial undulation (fig. 3); known host *Chrysocephalum apiculatum* in Central Australia . . . . . *chrysocephali*

17. Secondary endosomal strap discontinuous, broken at about midpoint, with no undulation (fig. 36); known host *Rutidosis helichrysoides* (Asteraceae); widely distributed around the margins of the Eyre Basin . . . . *rutidosi*

– Secondary endosomal strap continuous with a broad submedial undulation (fig. 16); host unknown; known from the south-central Nullarbor Plain. . . . . *maralinga*

18. Large, mean total length 5.18 or greater; ratiointerocular distance/width head 0.26 or less; known hosts Asteraceae spp. (except for *W. dicrastyli* on Lamiaceae) 19

– Smaller, mean total length 4.99 or less; ratio interocular distance/width head 0.31 or greater (except in *W. pinocchii* = 0.23); known hosts Lamiaceae spp (except *W. pinocchii* on Thymelaeaceae). 24

19. Left paramere elongate (figs. 9, 19), greatly extending beyond margin of pygophore in repose 20

– Left paramere shorter, only moderately extending beyond margin of pygophore in repose 21

20. Distal portion of endosoma, very long nearly straight; left paramere elongate, tapering toward apex, posterior process with a pronounced shoulder; known host *Dicrastylis flexuosa* (Lamiaceae); Goldfields region, Western Australia . . . . . *dicrastyli*

– Distal portion of endosoma, long weakly arcuate; left paramere elongate, broad over entire length, posterior process without a pronounced shoulder; known host *Olearia axillaris* (Asteraceae); Western Australia, Geraldton. . . . . *olearii*

21. Large, mean total length 5.85–5.97 22

– Smaller, mean total length 5.18–5.23. . . . 23

22. Posterior process of left paramere distinctly elevated (fig. 38); known hosts include *Ozothamnus* spp. (Asteraceae); Tasmania. . . . . *schwartzi*

– Posterior process of left paramere not elevated (fig. 1); host unknown; South Australia, Central Nullarbor . . . . . *baldersoni*

23. Posterior process of left paramere distinctly elevated (fig. 21); known host *Ozothamnus diosmifolius*. (Asteraceae); coastal New South Wales, Victoria . . . . . *ozothamni*

– Posterior process of left paramere not elevated (fig. 13); known host *Helichrysum* sp.; South Australia, Central Nullarbor. . . . . *helichrysi*

24. Small, mean total length 3.50–3.83 25

– Larger, mean total length 4.45–4.99 26

25. Left paramere short, barely extending beyond margin of pygophore in repose (fig. 22); known hosts include *Dicrastylis* spp. (Lamiaceae); Central Australia, Goldfields region of Western Australia . . . . . *paradicrastyli*

– Left paramere very long, greatly exceeding margin of pygophore in repose (fig. 15); known hosts include *Lachnostachys* spp. and *Dicrastylis* spp. (Lamiaceae); Western Australia, Goldfields and adjacent west coast. . . . . *lachnostachyos*

26. Left paramere very long (fig. 17), greatly exceeding margin of pygophore in repose; known hosts include *Newcastelia* spp. and *Dicrastylis* spp. (Lamiaceae); Western Australia, Goldfields and adjacent west coast . . . . . *newcastelii*

– Left paramere not so long, only moderately exceeding margin of pygophore in repose. 27

27. Left paramere with apex attenuated and tubular (fig. 25); known hosts include *Pimelea* spp.; extreme southwestern Western Australia, New South Wales . . . . . *pinocchii*

– Apex of left paramere not attenuated and tubular 28
28. Body moderately elongate, mean ratio total length/width pronotum 3.36–3.44 29
– Body more stout, mean ratio total length/width pronotum 3.02, known hosts include (pl. 1) *Dicrastylis* spp. and *Newcastelia* spp. (Lamiaceae); Western Australia, Goldfields region . . . . . *cassisi*
29. Head projecting anterior to eyes, mean ratio width head/length head 3.75 (pl. 4); known host *Prostanthera cambellii* (Lamiaceae); Western Australia, Goldfields Region . . . . . *prostantheri*
– Head only very slightly projecting anterior to eyes, mean ratio width head/length head 3.19 (pl. 4); known host *Rutidosis helichrysoides* (Asteraceae); Central Australia . . . . *rutidosi*
30. Body greatly elongate and slender, total length 6.67, ratio total length/width pronotum 3.96; coloration of dorsum more or less uniform dirty yellow (pl. 2); host unknown; Australian Capital Territory . . . . . *gingera*
– Body not so long, although sometimes slender, total length 6.10 or less; coloration variable 31
31. Large species, mean total length 5.83, relatively broad bodied (pl. 5), mean ratio total length/width pronotum 3.36; dorsum heavily set with nearly erect, heavy, black setae; known hosts include *Ozothamnus* spp. (Asteraceae); Tasmania . . . . . *tasmanensis*
– Not so large, mean total length 5.58 or less; if total length ~5.50 then body slender with mean ratio total length/width pronotum 3.60 or greater; setae on dorsum variable 32
32. Mean total length 5.45–5.58; body slender, mean ratio total length/width pronotum 3.58 or greater 33
– Mean total length 5.28 or less, often less than 4.00; mean ratio total length/width pronotum 3.17 or less 36
33. Head and pronotum with erect, heavy black setae; coloration of dorsum uniform dirty yellow (pl. 1); collected on *Craspedia* sp. (Asteraceae); New South Wales, Victoria . . . . . *craspedii*
– Dorsum with pale reclining setae, sometimes with some darker setae intermixed; coloration of dorsum with either a weakly quadrate or longitudinal pattern 34
34. Coloration of dorsum with a longitudinal pattern, with faint reddish linear markings on a pale background (pl. 2); host unknown; Western Australia, Norseman . . *norsemanius*
– Coloration of dorsum in a weakly quadrate pattern 35
35. Secondary endosomal strap with a weak subbasal undulation (fig. 46); host unknown; Western Australian, Madura . . . . . *uptoni*
– Secondary endosomal strap with a strong, short, submedial twist (fig. 5); host unknown; New South Wales, Coolabah . . . . *coolabah*
36. Large, broad bodied, mean total length 5.28, mean ratio total length/width pronotum 3.17; coloration of dorsum variable dirty yellow (pl. 3); left paramere with anterior process arising uniquely at about midpoint of paramere (fig. 28); known hosts include *Pityrodia* and *Cyanostegia* (Lamiaceae); Western Australia, Goldfields region . . . . . *pityrodii*
– Smaller, mean total length less than 4.00; coloration golden to orange; anterior process of left paramere arising near vesical shaft 37
37. Head and pronotum with erect, heavy, black setae (pl. 3); secondary endosomal strap complete and smoothly curving over entire length (fig. 23); known host *Pimelea* sp. (Thymelaeaceae); Tasmania . . . . . *pimelii*
– Head and pronotum with pale reclining setae (pl. 4); secondary endosomal strap incomplete, absent from proximal end of gonopore to about midpoint (fig. 29); known host *Pomaderris* sp. (Rhamnaceae); Victoria . . . . . *pomaderri*

Wallabicoris baldersoni, new species
Figure 1; map 4; plate 1

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 1), the large size, with a mean total length of 5.85, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad submedial undulation and the left paramere relatively short, with an elevated shoulder on the posterior process, closed over most of the dorsal surface, and only weakly exceeding the margin of the pygophore in repose (fig. 1). Host unknown. Somewhat smaller than the similarly colored Asteraceae-feeding *W. schwartzi*, somewhat larger than the Asteraceae-feeding *W. helichrysi*, *W. olearii*, and *W. ozothamni*, as well as the Lamiaceae-feeding *W. dicrastyli*; significantly larger than the Thymelaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachyos*, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*. Potentially confused with pale specimens of *W. rutidosi*, but that species smaller, mean total length 4.87, and with a broken secondary endosomal strap.

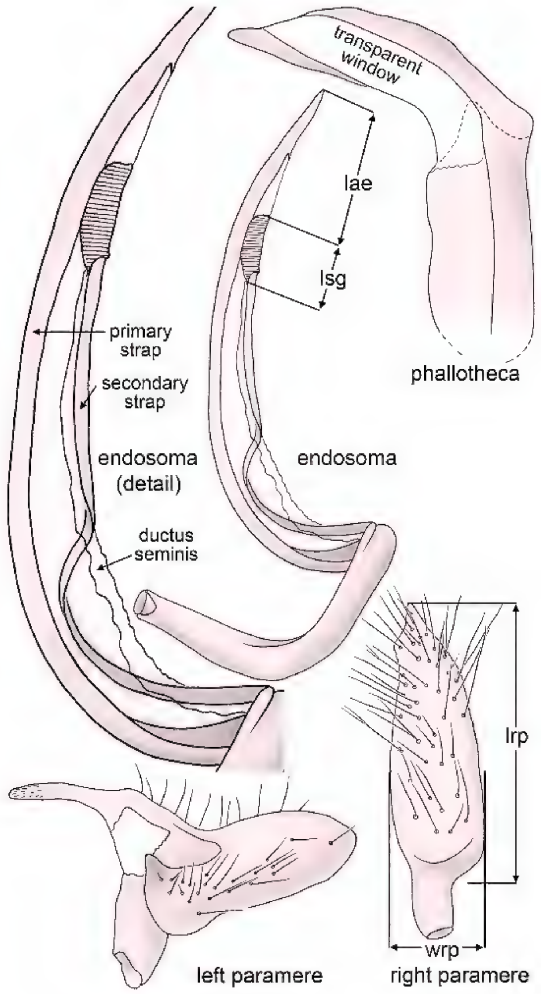


Fig. 1. *Wallabicoris baldersoni*, male genitalia (AMNH_PBI 001687890). lae = length apex endosoma; lrp = length right paramere; lsg = length secondary gonopore; wrp = width right paramere.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.69–6.06, ratio l/w = 3.60. COLORATION (pl. 1): Pronotum unicolorous pale; hemelytron unicolorous pale; membrane unicolorous pale, veins white, extreme base unicolorous with remainder; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration and with some sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.72; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.40; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 1): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap weakly elongate apically, ratio lae/lsg 2.00; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike, with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.75; body tapered from base to apex; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for J. Balderson, CSIRO, Canberra, the collector of the only known specimens.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known only from the type locality in the southeastern part of the Nullarbor Plain, South Australia.

HOLOTYPE: **AUSTRALIA: South Australia:** 1 mi ESE of Ooldea, 30.463°S 131.852°E, 03 Oct 1968, Key, Upton & Balderson, 1♂ (AMNH_PBI 00168785) (ANIC).

PARATYPES: **AUSTRALIA: South Australia:** 1 mi ESE of Ooldea, 30.463°S 131.852°E, 03 Oct 1968, Key, Upton & Balderson, 3♂ (00168788–00168790) (AMNH), 4♂ (00168783–00168784, 00168786–00168787) (ANIC).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: South Australia:** 1 mi ESE of Ooldea, 30.463°S 131.852°E, 03 Oct 1968, Key, Upton & Balderson, 1♂ (00168782) (ANIC).

Wallabicoris cassisi, new species
Figure 2; map 1; plate 1

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 1), the moderate size, with a mean total length of 4.45, the head distinctly projecting beyond the anterior margin of the eyes, ratio head width/head length 2.99, and the structure of the male genitalia, the apical portion of the endosoma erect, the secondary strap of the endosoma complete and with a short submedial twist and the left paramere relatively short, without a shoulder on the posterior process, open over most of the dorsal surface (fig. 2), and only weakly exceeding the margin of the pygophore in repose. Breeds on *Dicrastylis* sp., *Lachnostachys* sp., *and Newcastelia* sp. (Lamiaceae). Smaller than the similarly colored Lamiaceae-feeding *W. newcastelii* and *W. prostantheri* and the Thymelaeaceae-feeding *W. pinocchii*; larger that the Lamiaceae-feeding *W. lachnostachyos* and *W. paradicrastyli*. Smaller than all of the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species slightly larger, mean total length 4.87, and with a broken secondary endosomal strap.

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 4.25–4.65, ratio l/w = 3.02. COLORATION (pl. 1): Pronotum unicolorous pale; hemelytron unicolorous pale; membrane unicolorous pale, extreme base unicolorous with remainder, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale; antennal segment 1 with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with black setae intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 2.99; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.50; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium very long, reaching well onto pygophore. GENITALIA (fig. 2): **Endosoma:** Base short, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap short apically, ratio lae/lsg 1.40; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior

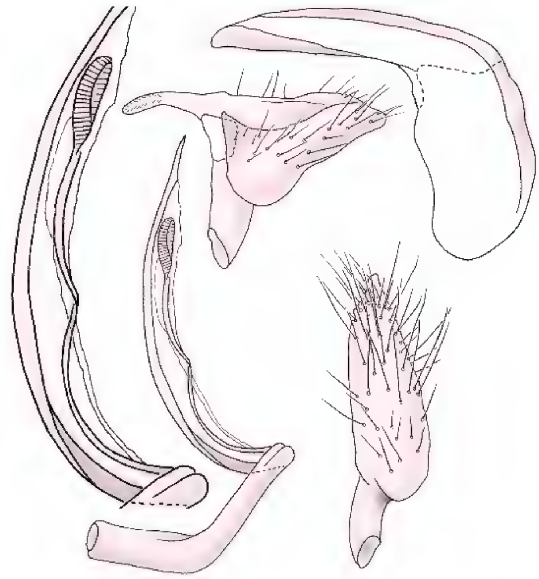


Fig. 2. *Wallabicoris cassisi*, male genitalia (AMNH_PBI 00090286).

process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.71; body tapered from base to apex; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for Gerasimos Cassis in recognition of his efforts in the field and the contributions he has made to our knowledge of *Wallabicoris*.

HOSTS: Recorded from *Newcastelia insignis* E. Pritz., *Lachnostachys coolgardiensis* S. Moore (pl. 9A), and *Dicrastylis fulva* forma *fulva* Harv. (pl. 8D), all from the Chloanthaceae section of the Lamiaceae.

DISTRIBUTION (map 1): Known from the Goldfields region of Western Australia.

DISCUSSION: The known distribution of *W. cassisi* corresponds closely with the distributions of its known hosts in the Goldfields-Kalbarri region of Western Australia. We have found it impossible to distinquish between the females of *W. cassisi* and *W. newcastelii* from certain collecting events and have therefore not treated these specimens as paratypes.

HOLOTYPE: **AUSTRALIA: Western Australia:** 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 1♂ (AMNH_PBI 00133136) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 24 km W of Sandstone, 28.01426°S 119.0474°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Lachnostachys coolgardiensis* S. Moore (Chloanthaceae), det. PERTH staff PERTH 05095174, 1♂ (00181909) (UNSW). 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 13♂ (00090282–00090294) (AM), 35♂ (00133108–00133135, 00133137–00133138, , 00133140–00133143, 00133145–00133146) (AMNH), 9♂ (00090295–00090302, 00133139) (WAMP). 79 km W of Sandstone, 28.03737°S 118.4983°E, 650 m, 26 Oct 1996, Schuh and Cassis, 1♂ (00090908) (AM). Kalbarri National Park, Z-Bend Road, 27.64166°S 114.4569°E, 450 m, 28 Oct 1996, Schuh and Cassis, *Dicrastylis fulva forma fulva* Harv. (Chloanthaceae), det. PERTH staff PERTH 05120500, 1♂ (00090076) (AM), 1♂ (00135875) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 7♀ (00133182–00133188) (AM), 28♀ (00133152–00133177, 00133189, 00133196) (AMNH), 4♀ (00133178–00133181) (UNSW), 6♀ (00133190–00133195) (WAMP). Kalbarri National Park, Z-Bend Road, 27.64166°S 114.4569°E, 450 m, 28 Oct 1996, Schuh and Cassis, *Dicrastylis fulva forma fulva* Harv. (Chloanthaceae), det. PERTH staff PERTH 05120500, 3♂ (00090073–00090074, 00090077) (UNSW).

Wallabicoris chrysocephali, new species
Figure 3; map 3; plate 1

DIAGNOSIS: Recognized among those species with heavily yellow coloration by the nearly uniform but not intensely yellow dorsum (pl. 1), by the moderately large size,

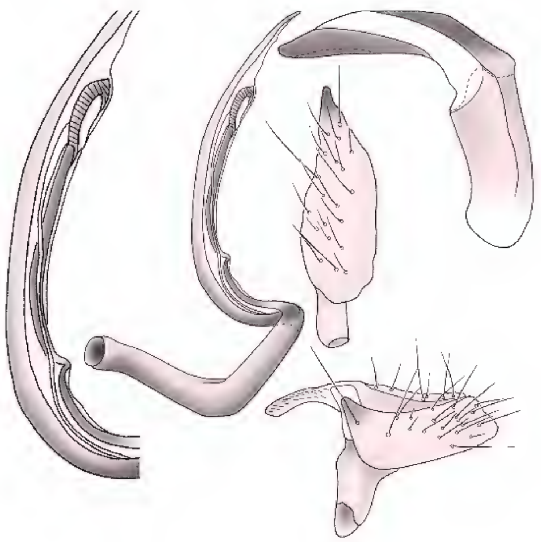


Fig. 3. *Wallabicoris chrysocephali*, male genitalia (AMNH_PBI 00097768).

mean total length 5.40; the relatively short rather strongly declivent head, ratio head length/head width 3.51; the left paramere relatively short and deep bodied and only moderately projecting beyond margin of pygophore (fig. 3); and the secondary endosomal strap with a short, kinklike, submedial undulation (fig. 3). Breeds on *Chrysocephalum apiculatum* (Asteraceae). Similar to *W. maralinga* and *W. rutidosi* in the relatively short, deep-bodied left paramere only moderately projecting beyond the margin of the pygophore, but coloration of dorsum in *W. rutidosi* not so uniformly yellow in many specimens. Distinguished from *W. sandstonensis* and *W. waitzii* by the much more elongate left paramere in those species projecting well beyond the margin of the pygophore, and the longer, more slender body, and more intensely yellow coloration in *W. waitzii*. Potentially confused with *W. commoni*, a species of similar size, mean total length 5.60, and uniform yellowish coloration, but secondary endosomal strap with a very broad subbasal undulation rather than a short medial twist as in *W. chrysocephali*.

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 5.18–5.67, ratio l/w = 3.52. COLORATION (pl. 1): Pronotum unicolorous yellow with a pale medial longitudinal stripe; hemelytron unicolorous yellow; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, veins white; venter unicolorous pale or mostly so; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.49; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.47; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 3): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.63; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 2.83; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus *Chrysocephalum* Walp. (Asteraceae).

HOSTS: Recorded only from *Chrysocephalum apiculatum* (Labill.) Steetz (Asteraceae: Gnaphalieae) or close relatives.

DISTRIBUTION (map 3): Recorded primarily from the McDonnell Ranges of central Australia in the Alice Springs region. The specimens from the Australian Capital Territory and New South Wales lack host data, but are morphologically very similar to material from Central Australia, suggesting a broad—but incompletely known—distribution.

DISCUSSION: *Chrysocephalum apiculatum* is very widely distributed in Australia. The records from New South Wales and the ACT may well be an indication that *W. chrysocephali* will prove to be more widely distributed as well.

HOLOTYPE: **AUSTRALIA: Northern Territory:** jct of Namitjara Rd and Gosse Bluff track, 23.78335°S 132.359°E, 711 m, 04 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Chrysocephalum apiculatum/semipappo-*

sum complex (Asteraceae), det. NSW staff NSW666332, 1♂ (AMNH_PBI 00098794) (AM).

PARATYPES: **AUSTRALIA: Northern Territory:** 3 mi NE of Gosses Bluff, 23.48°S 132.21°E, 20 May 1969, H. Pelz, 5♂ (00168751–00168755), 12♀ (00168756–00168767) (ANIC). 78 km S of Alice Springs at jct of Rainbow Valley Rd and Stuart Hiway, 24.23334°S 133.4567°E, 540 m, 27 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Chrysocephalum apiculatum* (Labill.) Steetz (Asteraceae), det. NSW staff NSW658372, 1♂ (00369049), 4♀ (00369050–00369053) (AMNH). Finke Gorge National Park, Palm Valley, 24.03333°S 132.7101°E, 586 m, 04 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, 1♂ (00097955), 3♀ (00097960–00097962) (AM), 2♂ (00097956, 00097957), 3♀ (00097963–00097965) (AMNH). jct of Namitjara Rd and Gosse Bluff track, 23.78335°S 132.359°E, 711 m, 04 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Chrysocephalum apiculatum/semipapposum complex* (Asteraceae), det. NSW staff NSW666332, 2♂ (00098797, 00098798), 3♀ (00098804–00098805, 00098810) (AM), 4♂ (00098791–00098793, 00098795), 6♀ (00098801–00098803, 00098806, 00098809, 00098811) (AMNH), 2♀ (00098807, 00098808) (ANIC), 1♂ (00098796), 2♀ (00098814, 00098815) (NTM), 1♂ (00098799), 2♀ (00098812, 00098813) (UNSW). ~66 km N of Lasseter Hiway on Luritja Road, 24.68335°S 132.3212°E, 545 m, 02 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Chrysocephalum apiculatum* (Labill.) Steetz (Asteraceae), det. NSW staff NSW666297, 1♂ (00097771) (AM), 1♂ (00097768) (AMNH), 1♂ (00097767), 2♀ (00097769, 00097770) (NTM).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Australian Capital Territory:** Canberra, 35.2833°S 149.2167°E, 605 m, Nov 1929, J. Evans, 1♀ (00168769) (ANIC). **New South Wales:** Coolabah, 31.019°S 146.689°E, 12 Oct 1963, D.H. Colless, 1♀ (00168768) (ANIC). Trangie, 32.03333°S 147.98333°E, 10 Feb 1951, B. Cameron, 1♀ (00168770) (ANIC).

Wallabicoris commoni, new species
Figure 4; map 4; plate 1

DIAGNOSIS: Recognized by the pale, partially yellowish coloration of the body and appendages (pl. 1), the large size, with a mean total length of 5.60, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad subbasal undulation the left paramere moderately long, without an elevated shoulder on the posterior process, open over most of the dorsal surface, and deep bodied, and the right paramere of nearly equal width over most of length (fig. 4). Host unknown. Potentially confused with Asteraceae-feeding *W. heli-*

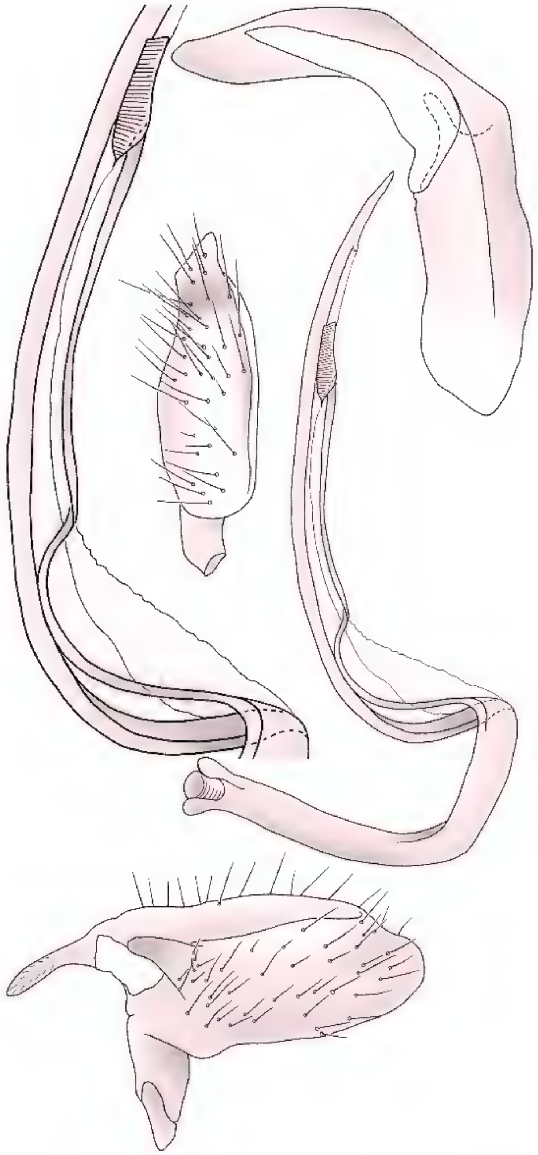


Fig. 4. *Wallabicoris commoni*, male genitalia (AMNH_PBI 00168796).

chrysi, *W. olearii*, *W. ozothamni*, and *W. schwartzi*, but those species with weak transverse marking on posterior half of hemelytra as opposed to the longitudinal marking seen in *W. commoni*. Also potentially confused with the similarly sized Lamiaceae-feeding *W. dicrastyli*, but that species with heavy black bases on the femoral and tibial spines in contrast to the pale or weakly darkened based in *W. commoni*. Significantly larger than the Thymalaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachyos*, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.60, ratio l/w = 3.51. COLORATION (pl. 1): Pronotum unicolorous, weakly yellow, endocorium with dirty or golden areas; markings on cuneus present as partial or complete but weak infuscation; membrane with extreme base unicolorous pale, remainder partially fumose, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.11; antennal fossa with ventral margin 2 diameters above ventral margin of eye; interocular space large, ratio iod/wh = 0.32; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 4): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap weakly elongate apically, ratio lae/lsg 2.00; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.22; body tapered from base to apex; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for Ian Common of the CSIRO, who collected all the known specimens.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known from a single collecting event in central Queensland.

HOLOTYPE: **AUSTRALIA: Queensland:** 4 mi W of Paluma, 22.54999°S 144.82039°E, 914 m, 25 Apr 1969, I.F.B. Common & M.S. Upton, 1♂ (AMNH_PBI 00168796) (ANIC).

PARATYPES: **AUSTRALIA: Queensland:** 4 mi W of Paluma, 22.54999°S 144.82039°E, 914 m, 25 Apr 1969, I.F.B. Common & M.S. Upton, 2♀ (00168797, 00168798) (ANIC).

Wallabicoris coolabah, new species
Figure 5; map 4; plate 1

DIAGNOSIS: Recognized by the large size and the elongate slender body form, total length 5.45, ratio length/width 3.58, the pale setae on the dorsum, the quadrate pattern of coloration on the dorsum (pl. 1), and the form of the male genitalia, the secondary endosomal strap with a short submedial twist, a short left paramere, and a lanceolate right paramere (fig. 5). Separated from other large species with an elongate body form as follows: from *W. craspedii* by the heavy black setae on the dorsum, the broad subbasal undulation in the secondary endosomal strap, and the longer left paramere in that species; from *W. norsemanius* by the longitudinal rather that quadrate color pattern and much more elongate left paramere in that species; and from *W. uptoni* by the subbasal

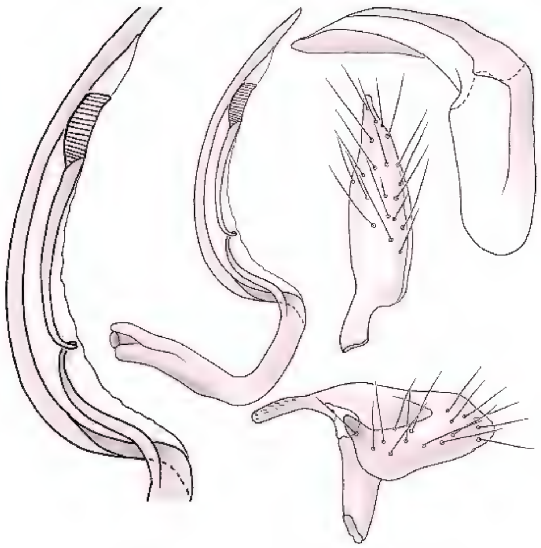


Fig. 5. *Wallabicoris coolabah*, male genitalia (AMNH_PBI 00168795).

undulation in the secondary endosomal strap and the more elongate left paramere.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.29–5.61, ratio l/w = 3.59. COLORATION (pl. 1): Pronotum more or less unicolorous yellow-brown with a pale medial stripe; hemelytron with extensive pale areas with extensive infuscation on clavus and as a broad transverse fascia at level of apex of clavus; markings on cuneus present as conspicuous infuscation on posterior two-thirds; membrane with elongate, contrasting, fumose marking at extreme base, remainder variably weakly to strongly fumose over entire area, veins white; venter heavily infuscate, at least on mesopleuron and abdomen, yellow to dirty yellow; antennal segment 1 with one or two black medial setae; antennal segment 2 dirty yellow proximally, weakly to heavily infuscate distally; labium pale with segment 4 heavily infuscate; hind femora unicolorous yellow to weakly infuscate, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.52; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.48; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 5): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap short apically, ratio lae/lsg 2.00; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.77; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the type locality.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known from a single collecting event in the interior of New South Wales.

HOLOTYPE: **AUSTRALIA: New South Wales:** Coolabah, 31.019°S 146.689°E, 12 Oct 1963, D.H. Colless, 1♂ (AMNH_PBI 00168794) (ANIC).

PARATYPE: **AUSTRALIA: New South Wales:** Coolabah, 31.019°S 146.689°E, 12 Oct 1963, D.H. Colless, 1♂ (00168795) (AMNH).

Wallabicoris craspedii, new species
Figure 6; map 3; plate 1

DIAGNOSIS: Recognized by the large size and the elongate slender body form, total length 5.56, ratio length/width 3.60, the heavy black setae on the dorsum, the more

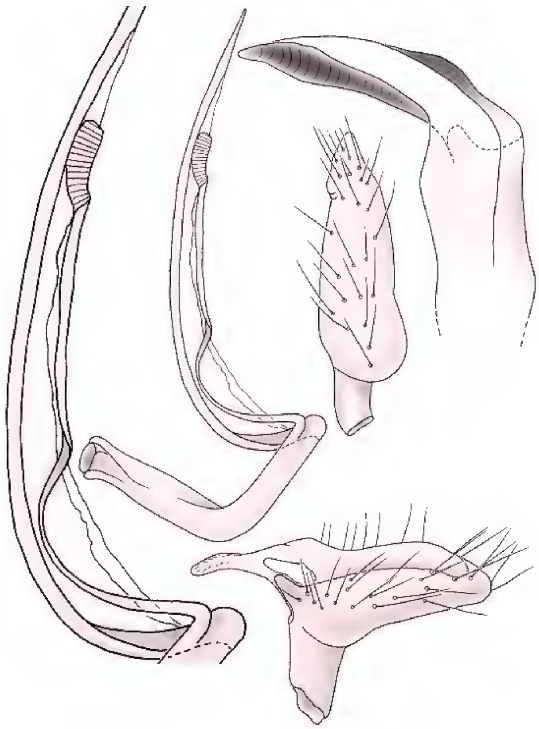


Fig. 6. *Wallabicoris craspedii*, male genitalia (AMNH_PBI 00089293).

or less uniform greenish yellow coloration of the dorsum (pl. 1), and the form of the male genitalia, the secondary endosomal strap with a broad subbasal undulation, an elongate left paramere, and a lanceolate right paramere (fig. 6). Separated from other large species with a large elongate body as follows: from *W. coolabah* by the pale setae on the dorsum, the short submedial twist in the secondary endosomal strap, and the shorter left paramere in that species; from *W. norsemanius* by the pale setae on the dorsum, the longitudinal color pattern and the short submedial twist in the secondary endosomal strap in that species; and from *W. uptoni* by the less pronounced subbasal undulation in the secondary endosomal strap and the somewhat less elongate left paramere.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.20, ratio l/w = 3.63. COLORATION (pl. 1): Pronotum unicolorous greenish yellow; hemelytron mostly pale, greenish yellow; markings on cuneus present as partial or complete but weak infuscation; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly to strongly fumose over entire area, veins white; venter heavily infuscate, at least on mesopleuron and abdomen; antennal segment 1 dirty yellow, with strong infuscation at base and apex, with one or two black medial setae; antennal segment 2 dirty yellow proximally, weakly infuscate distally; labium generally infuscate, heavily so apically; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with erect black setae, particularly on pronotum, intermixed with pale setae on hemleytron, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.77; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space moderate, ratio iod/wh = 0.42; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 6): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap elongate apically, ratio lae/lsg 2.40; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.38; body tapered from base to apex; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex tapered.

ETYMOLOGY: Named for the host genus, *Craspedia* Forster (Asteraceae).

HOSTS: Recorded from *Craspedia* sp. (Asteraceae: Gnaphalieae).

DISTRIBUTION (map 3): Known from several localities in New South Wales and Victoria, most in the Great Dividing Range.

DISCUSSION: Further attention to sampling on *Craspedia* will help to determine the extent to which this primarily high latitude—high elevation group of plants serves as hosts for *Wallabicoris* spp.

HOLOTYPE: **AUSTRALIA: New South Wales:** Mount Kosciusko, 36.45°S 148.26°E, 01 Feb 1952–12 Feb 1952, C.E. Chadwick, *Craspedia* sp. (Asteraceae), 1♂ (AMNH_PBI 00089293) (AM).

PARATYPES: **AUSTRALIA: New South Wales:** Charlottes Pass, Kosciusko National Park, 36.43333°S 148.31666°E, 1800 m, 17 Feb 1963, D.K. McAlpine, 1♂ (00090859) (AM). Lake Cootapatamba, Snowy Mountains, 09 Feb 1979, D.K. McAlpine & B.J. Day, 1♂ (00090907) (AM). Mount Kosciusko, 36.45°S 148.26°E, 01 Feb 1952–12 Feb 1952, C.E. Chadwick, *Craspedia* sp. (Asteraceae), 2♀ (00089295, 00089296) (AM); 14 Feb 1963, D.K. McAlpine, 1♂ (00090652) (AMNH). **Victoria:** near Rosebud, Mornington Peninsula, 04 Jan 1976, M.S. Moulds, 1♂ (00090653) (AM).

Wallabicoris cuneotinctus, new species
Figure 7; map 2; plate 1

DIAGNOSIS: Among those species with numerous red spots on the dorsum, most similar to *W. thomasii* and *W. trymalii* in the complete transverse fascia posteriorly on the corium, the cuneus red at least on the posterior half (pl. 1), the secondary endosomal strap with a submedial bifurcation and left paramere elongate and extending well beyond the margin of the pygophore (fig. 7). Separated from *W. thomasii* by the intense red spotting of the entire dorsum in that species; distinguished from *W. trymalii* by the occurrence of that species in extreme southwestern Western Australia instead of the south coast of Victoria.

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 3.86–4.36, ratio l/w = 3.08. COLORATION (pl. 1): Pronotum pale with red or carmine botches; hemelytron with red or carmine botches, most densely so medially on clavus and on corium as a broad fascia at level of apex of clavus; red fascia on corium/clavus present anterior to cuneal fracture and on clavus; markings on cuneus present, solid carmine over most of posterior half; membrane with elongate, contrasting, fumose marking at

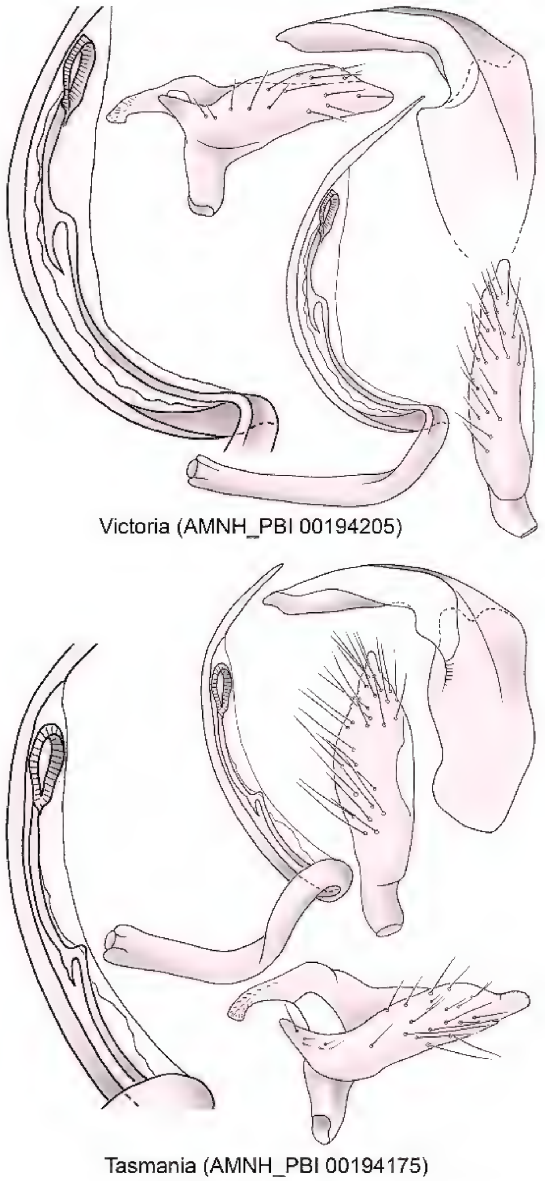


Fig. 7. *Wallabicoris cuneotinctus*, male genitalia (AMNH_PBI 00194205).

extreme base, remainder weakly to strongly fumose over entire area, veins white; venter light yellow; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with conspicuous dark spots at bases. SURFACE AND VESTITURE: Dorsum with black setae intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.77; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.45; eyes occupying entire height of head in lateral view (hg0–1/he20); labium reaching to margin of pygophore. GENITALIA (fig. 7): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap greatly elongate apically, ratio lae/lsg 3.00; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, bifurcating at about midpoint; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.17; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the colorful nature of the cuneus, combining cuneus and the Latin *tinctus*, "dyed" or "painted."

HOSTS: Recorded from various species of Rhamnaceae, including *Pomaderris oraria* subsp. *oraria* F. Muell. ex Reissek, and *Pomaderris apetala* Labill.

DISTRIBUTION (map 2): Under the present conception of *W. cuneotinctus*, the range of the taxon includes the south coast of Victoria and central Tasmania.

DISCUSSION: Both known hosts occur on the south coast of Victoria and in Tasmania. Thus, we might expect only limited extensions of the range of *W. cuneotinctus* beyond what is currently known.

HOLOTYPE: **AUSTRALIA: Victoria:** Wilsons Promonotory National Park, Darley River area, 38.97705°S 146.2749°E, 50 m, 18 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Pomaderris oraria* subsp. *oraria* F. Muell. ex Reissek (Rhamnaceae), det. NSW staff NSW658188, 1♂ (AMNH_PBI 00194192) (MVMA).

PARATYPES: **AUSTRALIA: Victoria:** Wilsons Promonotory National Park, Darley River area, 38.97705°S 146.2749°E, 50 m, 18 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Pomaderris oraria subsp. oraria* F. Muell. ex Reissek (Rhamnaceae), det. NSW staff NSW658188, 6♂ (00194200–00194204, 00194206), 4♀ (00194214, 00194216–00194217, 00194220) (AM), 16♂ (00194183, 00194186–00194191, 00194193–00194199, 00194205, 00194207), 11♀ (00194208–00194213, 00194215, 00194218–00194219, 00194221, 00194224 (AMNH), 2♂ (00194180, 00194181), 1♀ (00194225) (MVMA), 3♂ (00194182, 00194184–00194185), 2♀ (00194222, 00194223) (UNSW).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Tasmania:** Mt. Field National Park, Russell Falls Visitor Centre, 42.68151°S 146.7168°E, 167 m, 16 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Pomaderris apetala* Labill. (Rhamnaceae), det. NSW staff NSW658218, 1♂ (00194176), 1♀ (00194179) (AM), 1♂ (00194175), 1♂ (00194174), 2♀ (00194177, 00194178) (AMNH).

Wallabicoris dicrastyli, new species
Figures 8, 9; map 1; plate 1

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 1), the moderately large size, with a mean

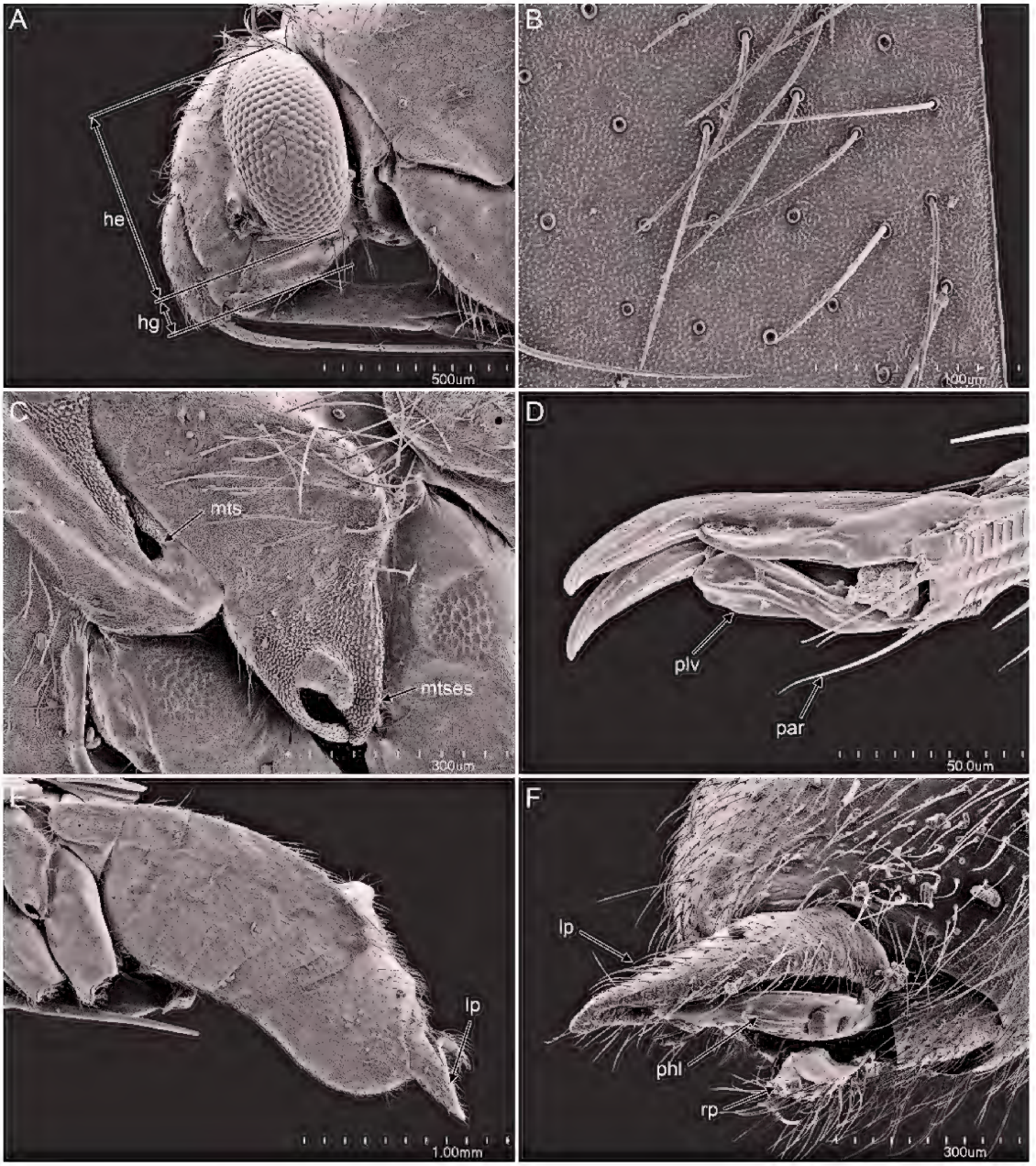


Fig. 8. *Wallabicoris dicrastyli*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium adjacent to claval suture. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in lateroventral view. **E.** Abdomen in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view. he = height eye; hg = height gula; lp = left paramere; mts = mesothoracic spiracle; mtses = metathoracic scent-efferent system; par = parempodium; phl = phallotheca; plv = pulvillus; rp = right paramere (AMNH_PBI 00135694).

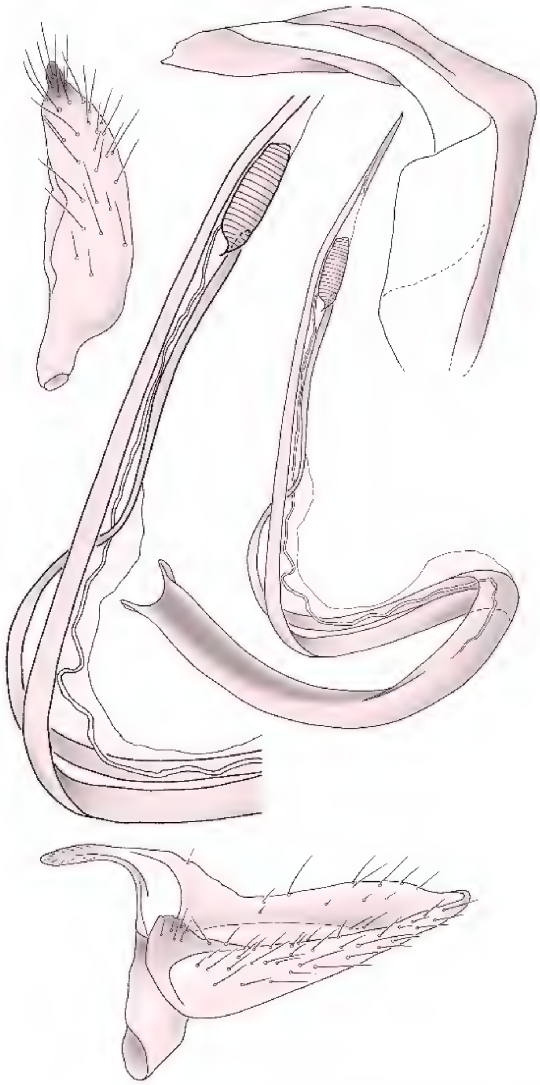


Fig. 9. *Wallabicoris dicrastyli*, male genitalia (AMNH_PBI 00132112).

total length of 5.41, and the structure of the male genitalia, the apical portion of the endosoma erect, the secondary strap of the endosoma complete and with a broad submedial undulation, and the left paramere very long, with an elevated shoulder on the posterior process, open over most of the dorsal surface, and greatly exceeding the margin of the pygophore in repose (figs. 8F, 9). Breeds on *Dicrastylis flexuosa* (Lamiaceae). Smaller than the similarly colored Asteraceae-feeding *W. baldersoni* and *W. schwartzi*; similar in size to the Asteraceae-feeding *W. helichrysi* and *W. ozothamni*; larger than the Thymelaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachy*os, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*. Potentially confused with *W. rutidosi*, but that species smaller, mean total length 4.87, and with a broken secondary endosomal strap.

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 5.22–5.64, ratio l/w = 2.94. COLORATION (pl. 1): Pronotum unicolorous pale; hemelytron unicolorous pale, nearly white; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder unicolorous pale, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.60 (fig. 8A); antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.44; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium reaching to midpoint of abdomen. GENITALIA (figs. 8E, F, 9): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap weakly elongate apically, ratio lae/lsg 2.00; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising

slightly forward of posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.68; body rounded laterally; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus, *Dicrastylis* J.L. Drumm. ex Harvey.

HOSTS: Recorded only from *Dicrastylis flexuosa* (W.R. Price) C.A. Gardner (Lamiaceae) (pl. 8B).

DISTRIBUTION (map 1): Known from the Goldfields region of Western Australia.

DISCUSSION: The known distribution of *W. dicrastyli* corresponds closely with the distributions of its known hosts in the Goldfields region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 80.2 km W of Agnew toward Sandstone, 28.00117°S 119.9593°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Dicrastylis flexuosa* (W.R. Price) C.A. Gardner (Chloanthaceae), det. PERTH staff PERTH 05054729, 1♂ (AMNH_PBI 00135692) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 80.2 km W of Agnew toward Sandstone, 28.00117°S 119.9593°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Dicrastylis flexuosa* (W.R. Price) C.A. Gardner (Chloanthaceae), det. PERTH staff PERTH 05054729, 17♂ (00090204, 00090208, 00090212, 00090221, 00090223, 00090225, 00090233, 00090555–00090564), 21♀ (00090197–00090198, 00090200–00090201–00090203, 00090205–00090207, 00090209–00090211, 00090215–00090220, 00090222, 00090224, 00090226) (AM), 25♂ (00132109, 00132112, 00135676–00135679–00135681–00135691, 00135693–00135699), 46♀ (00135707, 00135713, 00135721–00135764) (AMNH), 6♂ (00090196, 00090199, 00090213–00090214, 00090227, 00090234), 7♀ (00090228–00090232, 00090235–00090236) (UNSW), 4♂ (00132108, 00132110–00132111, 00132113), 32♀ (00090565–00090588, 00132121–00132122, 00135765–00135770) (WAMP). NW Coastal Hiway 36 km N of Kalbarri Road, 27.62473°S 114.6902°E, 500 m, 29 Oct 1996, Schuh and Cassis, 1♂ (00373031) (AM).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 80.2 km W of Agnew toward Sandstone, 28.00117°S 119.9593°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Dicrastylis flexuosa* (W.R. Price) C.A. Gardner (Chloanthaceae), det. PERTH staff PERTH 05054729, 26♀ (00132114–00132120, 00135700–00135706, 00135708–00135712, 00135714–00135720) (AMNH). Carnarvon, Blue Bush, 24.88965°S 113.66922°E, 02 Sep 1953, A.S., 5♂ (00202579 [cat 57–327]–00202583 [cat 57–326]), 4♀ (00202575 [cat 57–316]–00202578 [cat 57–324]) (WAMP).

Wallabicoris ellae, new species
Figure 10; map 2; plate 2

DIAGNOSIS: Recognized uniquely by the large size, mean total length 5.47, and the cream-colored dorsum covered with irregular discrete carmine blotches on the posterior pronotal lobe, scutellum, clavus, corium, and cuneus (pl. 2). Male genitalia as in figure 10. Breeds on *Keraudrenia* (Sterculiaceae).

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 5.22–5.76, ratio l/w = 3.27. COLORATION (pl. 2): Pronotum pale with carmine botches; hemelytron with carmine botches; red fascia on corium/clavus absent; markings on cune-

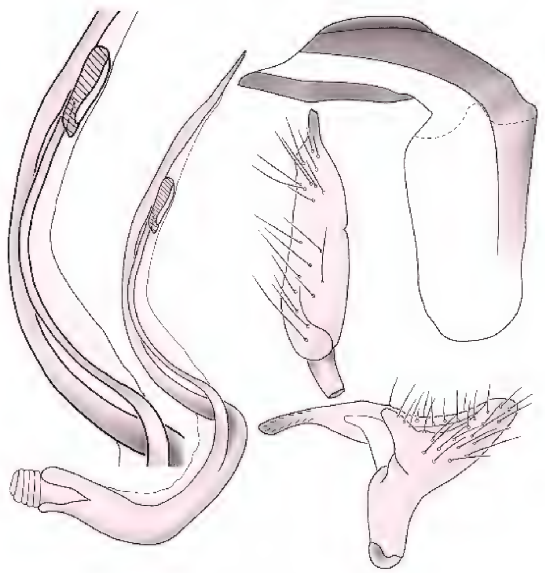


Fig. 10. *Wallabicoris ellae*, male genitalia (AMNH_PBI 00133270).

us present as individual carmine blotches; membrane unicolorous pale with a few small carmine markings, veins white, extreme base unicolorous with remainder; venter unicolorous pale or mostly so; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with black setae intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.28; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.38; eyes occupying entire height of head in lateral view (hg0–1/he20); labium reaching from abdominal midpoint to margin of pygophore. GENITALIA (fig. 10): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap elongate apically, ratio lae/lsg 2.50; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, smoothly curving over entire length; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.25; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for Ella Massie-Schuh, in recognition of her contributions to this project.

HOSTS: Recorded only from *Keraudrenia integrifolia* Steud. (Sterculiaceae) (pl. 11E).

DISTRIBUTION (map 2): Known from the Goldfields region of Western Australia.

DISCUSSION: The distribution of *Keraudrenia integrifolia* is much wider than the known distribution of *W. ellae*, which appears to be restricted to the Goldfields region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Keraudrenia integrifolia* Steud. (Sterculiaceae), det. PERTH staff PERTH 05120756, 1♂ (AMNH_PBI 00133268) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Keraudrenia integrifolia* Steud. (Sterculiaceae), det. PERTH staff PERTH 05120756, 7♂ (00089077–00089083), 23♀ (00087925, 00089052–00089073) (AM), 18♂ (00133267, 00133269–00133270–00133272–00133275, 00133280, 00136232–00136240), 25♀ (00133302, 00133281–00133290–00133292, 00133297, 00136241–00136246–00136248–00136251) (AMNH), 5♂ (00087176, 00087454, 00087918, 00089084–00089085), 5♀ (00087177, 00087923–00087924, 00087926–00087927) (UNSW), 5♂ (00087919, 00133276–00133279), 17♀ (00087920–00087922, 00089074–00089076, 00133293–00133296, 00133298–00133301, 00133303–00133305) (WAMP). 82.2 km W of Agnew toward Sandstone, 28.01057°S 119.9455°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Keraudrenia integrifolia* Steud. (Sterculiaceae), det. PERTH staff PERTH 05095166, 1♀ (00090860) (AM). Boorabin Rock, 31.12°S 120.17°E, 04 Oct 1981–09 Oct 1981, T.F. Houston, Light Trap, 1♀ (00202567) (WAMP).

Wallabicoris gingera, new species
Figure 11; map 4; plate 2

DIAGNOSIS: Recognized uniquely by its very elongate slender body form, total length 6.67, ratio total length/width pronotum 3.96. Coloration of dorsum dirty yellow without the suggestion of longitudinal or transverse markings (pl. 2); secondary endosomal strap with a

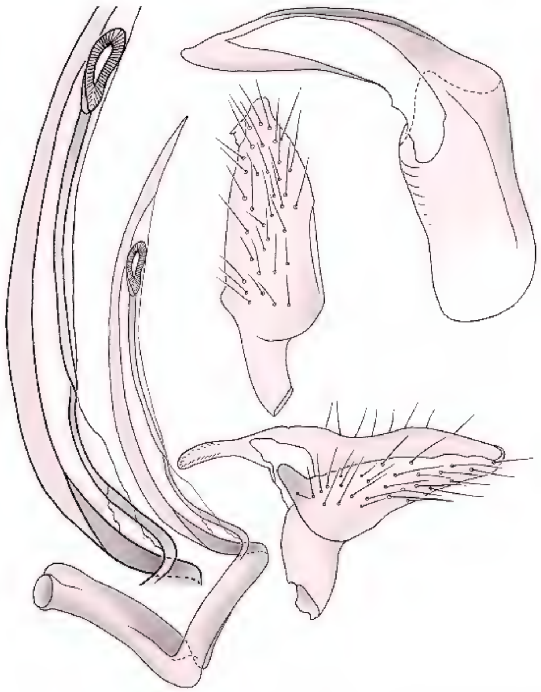


Fig. 11. *Wallabicoris gingera*, male genitalia (AMNH_PBI 00168799).

weak submedial twist; left paramere tapering toward apex (fig. 11). Most similar in total length to *W. schwartzi*, but that species only with pale setae on dorsum, as opposed to the heavy black setae seen in *W. gingera*.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 6.67, ratio l/w = 3.96. COLORATION (pl. 2): Pronotum unicolorous dirty yellow, weakly greenish on posterior lobe; hemelytron unicolorous dirty yellow; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly fumose over entire area, veins white; venter heavily infuscate, at least on mesopleuron and abdomen; antennal segment 1 dirty yellow, with strong infuscation at base and apex, with one or two black medial setae; antennal segment 2 dirty yellow proximally, weakly to heavily infuscate distally; labium generally infuscate, heavily so apically; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with black setae intermixed with pale setae on hemleytron, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.62; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.40; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 11): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.40; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body short and broad, ratio lrp/wrp 2.55; body tapered from base to apex; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the type locality, Mt. Gingera.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known only from the type locality, in the Australian Capital Territory on the west slope of the Great Dividing Range.

HOLOTYPE: **AUSTRALIA: Australian Capital Territory:** Mount Gingera, 35.581°S 148.784°E, 19 Dec 1950, I.F.B. Common, 1♂ (AMNH_PBI 00168799) (ANIC).

PARATYPES: **AUSTRALIA: Australian Capital Territory:** Mount Gingera, 35.581°S 148.784°E, 19 Dec 1950, I.F.B. Common, 1♀ (00168803) (AMNH), 3♀ (00168800–00168802) (ANIC).

Wallabicoris halganii, new species
Figure 12; map 1; plate 2

DIAGNOSIS: Recognized by the presence of numerous small dark spots on the hemelytra and pronotum (pl. 2), as well as dark spots at the base of the tibial spines; apical half of endosoma nearly straight and erect, secondary endosomal strap with a short submedial twist; left paramere greatly elongate, closed over most of dorsal surface, greatly extending beyond margin of pygophore in repose (fig. 12). Most similar to *W. pityrodiellus* in the presence of spots on the hemelytra, but spots lacking on the pronotum in that species, and tibiae without distinct spots at the bases of spines.

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 4.42–5.12, ratio l/w = 3.12. COLORATION (pl. 2): Pronotum pale, yellowish, with brown spots; hemelytron unicolorous pale, yellowish, with many small brown spots, especially on posterior lobe; red fascia on corium/clavus absent; markings on cuneus present as brown spots; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, veins yellow; venter light green; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow proximally, weakly to heavily infuscate distally; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with conspicuous dark spots at bases. SURFACE AND VESTITURE: Dorsum with suberect black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.20; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.51; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium reaching to about midpoint of abdomen. GENITALIA (fig. 12): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.88; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft;

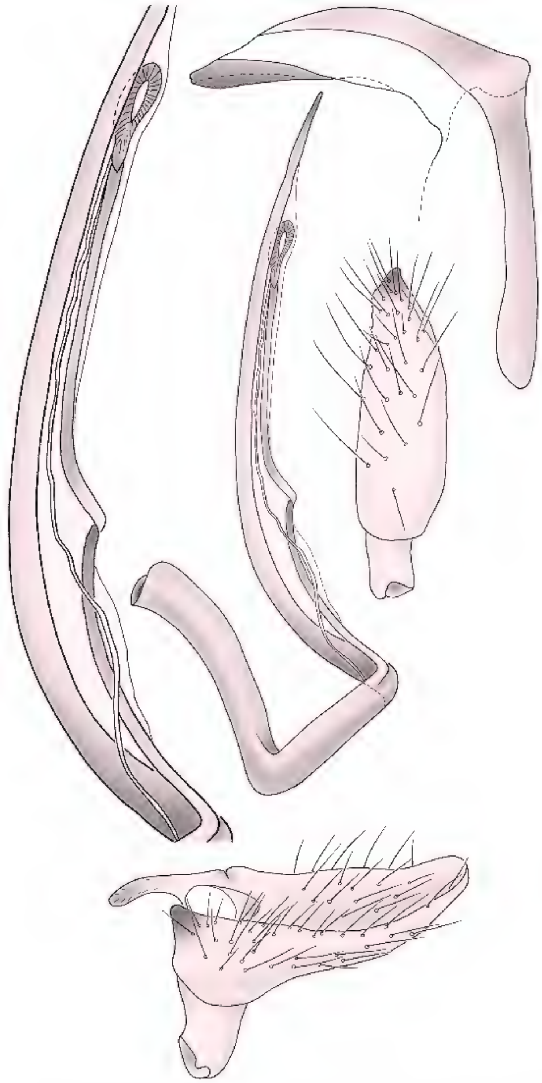


Fig. 12. *Wallabicoris halganii*, male genitalia (AMNH_PBI 00136984).

anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.82; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Halgania* Gaudich (Boraginaceae).

HOSTS: Recorded only from *Halgania viscosa* S. Moore (Boraginaceae).

DISTRIBUTION (map 1): Known from a single collecting event at the southeastern margin of the Goldfields region of Western Australia.

DISCUSSION: *Halgania viscosa* is known from a limited area of Western Australia that includes the type locality of *W. halganii*. This is in strong contrast to other species of *Halgania*, such as *H. cyanea* Lindl., which are very widely distributed and known from a very large number of collections.

HOLOTYPE: **AUSTRALIA: Western Australia:** 81 km E of Norseman, 32.07347°S 122.6166°E, 600 m, 23 Oct 1996, Schuh and Cassis, *Halgania viscosa* S. Moore (Boraginaceae), det. PERTH staff PERTH 05099749, 1♂ (AMNH_PBI 00136990) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 81 km E of Norseman, 32.07347°S 122.6166°E, 600 m, 23 Oct 1996, Schuh and Cassis, *Halgania viscosa* S. Moore (Boraginaceae), det. PERTH staff PERTH 05099749, 3♂ (00136981–00136982, 00136989), 3♀ (00136995–00136996, 00137000) (AM), 5♂ (00136977, 00136983–00136985, 00136986), 5♀ (00136992, 00136994, 00136998–00136999, 00137001) (AMNH), 2♂ (00136975, 00136987), 1♀ (00137002) (UNSW), 5♂ (00136976, 00136978–00136980, 00136988), 3♀ (00136991, 00136993, 00136997) (WAMP).

Wallabicoris helichrysi, new species
Figure 13; map 3; plate 2

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 2), the moderately large size, with a mean total length of 5.23, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad submedial undulation and the left paramere relatively short, without an elevated shoulder on the posterior process, closed over most of the dorsal surface (fig. 13), and only weakly exceeding the margin of the pygophore in repose; phallotheca not heavily sclerotized and nearly black as in *W. schwartzi*. Breeds on *Helichrysum* sp. Smaller than the similarly colored Asteraceae-feeding *W. baldersoni*, *W.*

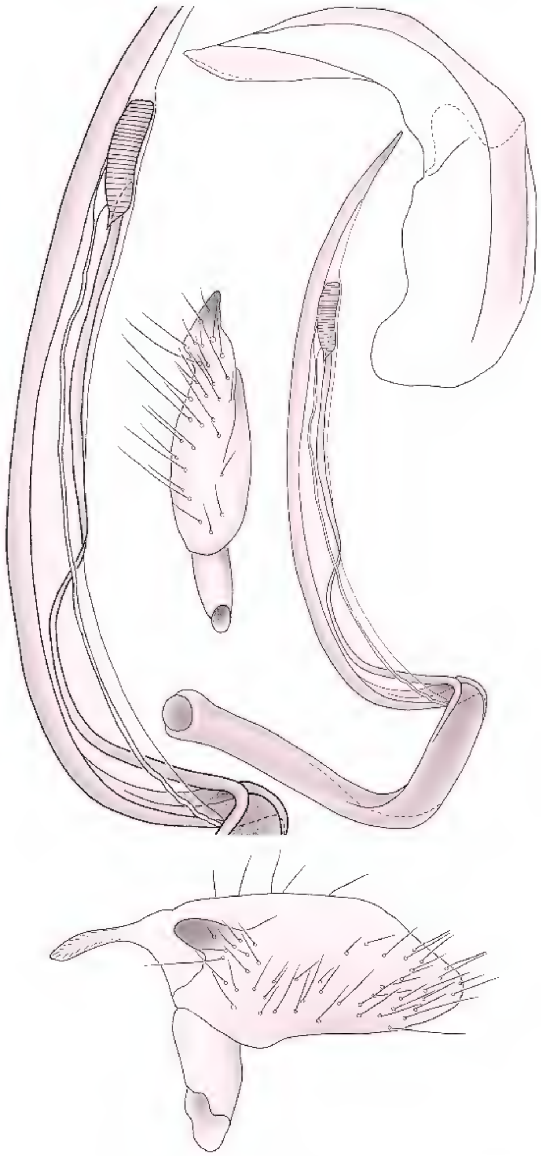


Fig. 13. *Wallabicoris helichrysi*, male genitalia (AMNH_PBI 00089255).

olearii, and *W. schwartzi*; similar in size to the Asteraceae-feeding *W. ozothamni* and the Lamiaceae-feeding *W. dicrastyli*; somewhat larger than the Thymelaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachyos*, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*. Potentially confused with *W. rutidosi*, but that species smaller, mean total length 4.87, and with a broken secondary endosomal strap.

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 5.06–5.33, ratio l/w = 3.27. COLORATION (pl. 2): Pronotum unicolorous pale; hemelytron mostly pale endocorium posteriorly and clavus with dirty areas; markings on cuneus absent; membrane pale basally, strongly fumose along posterior margin, veins white, extreme base pale; venter light green; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale to weakly infuscate; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Barely projecting, ratio wh/lh = 4.88; antennal fossa with ventral margin 2 diameters above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.40; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium just reaching onto abdomen. GENITALIA (fig. 13): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 2.00; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process directed posteriorly; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.19; body more or less parallel sided; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus, *Helichrysum* Miller (Asteraceae).

HOSTS: Recorded from *Helichrysum* sp. (Asteraceae: Gnaphalieae).

DISTRIBUTION (map 3): Known from a single collecting event in the Great Dividing Range in southern New South Wales.

HOLOTYPE: **AUSTRALIA: New South Wales:** Mount Keira, 34.24°S 150.51°E, 15 Dec 1989, G. Cassis, *Helichrysum* sp. (Asteraceae), 1♂ (AMNH_PBI 00089236) (AM).

PARATYPES: **AUSTRALIA: New South Wales:** Mount Keira, 34.24°S 150.51°E, 15 Dec 1989, G. Cassis, *Helichrysum* sp. (Asteraceae), 18♂ (00089218–00089226, 00089228–00089230, 00089232–00089235, 00089251, 00089256), 3♀ (00089261, 00089263–00089264) (AM), 16♂ (00089227, 00089231, 00089242–00089250, 00089252–00089255, 00089257), 3♀ (00089262, 00089265–00089266) (AMNH), 5♂ (00089237–00089241) (UNSW).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: New South Wales:** Mount Keira, 34.24°S 150.51°E, 15 Dec 1989, G. Cassis, *Helichrysum* sp. (Asteraceae), 3 nymphs (00089258–00089260) (AM).

Wallabicoris lachnostachyos, new species
Figures 14, 15; map 1; plate 2

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 2), the small size, with a mean total length of 3.59, and the structure of the male genitalia, the apical portion of the endosoma weakly curving, the secondary strap of the endosoma complete and with a short submedial undulation, and the left paramere greatly elongate, with a low shoulder on the

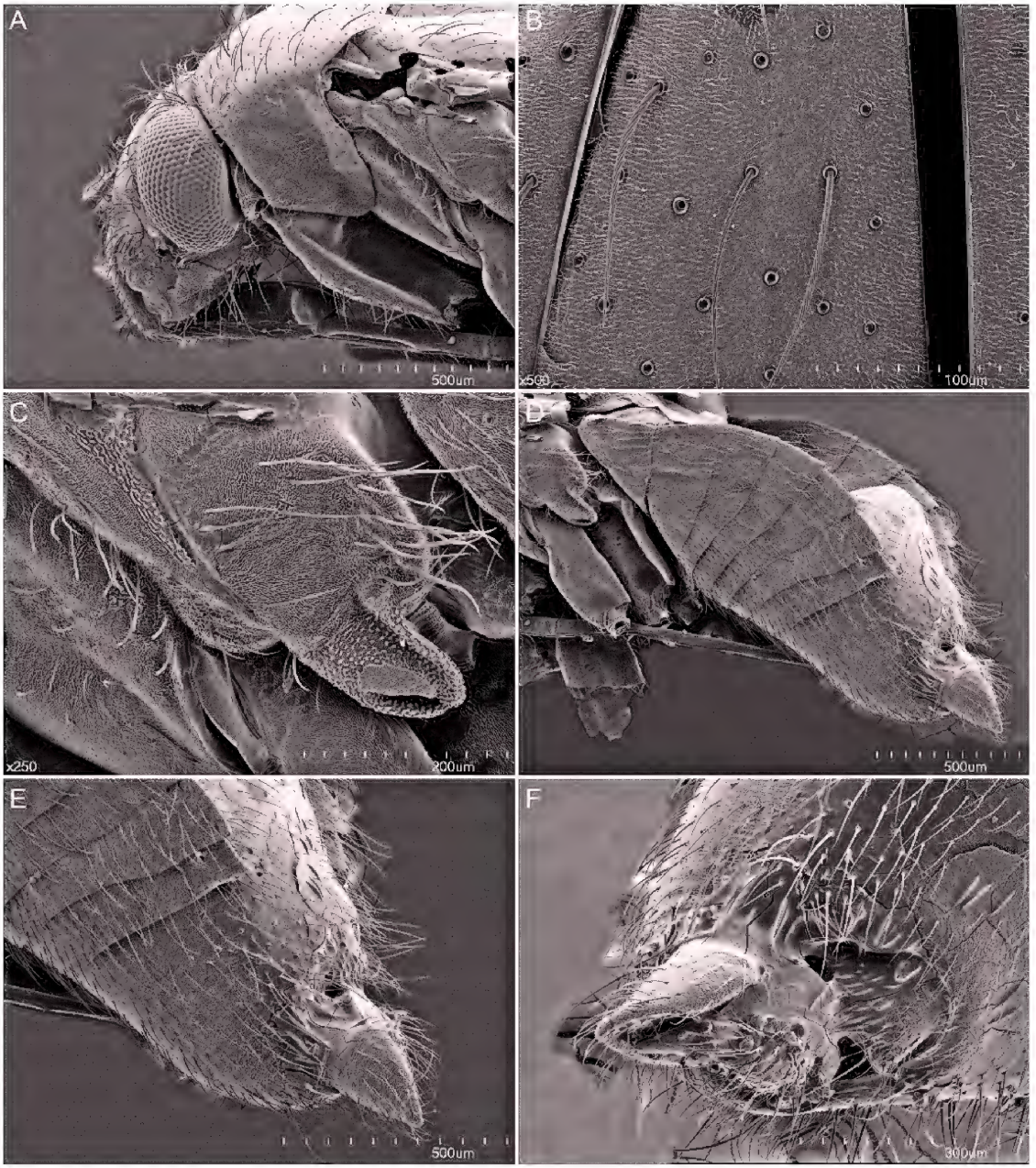


Fig. 14. *Wallabicoris lachnostachyos*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium adjacent to claval suture. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Abdomen in lateral view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00134788).

posterior process, open over most of the dorsal surface (fig. 15), and greatly exceeding the margin of the pygophore in repose. Head only moderately projecting beyond anterior margin of eyes, mean ratio width head/length head 3.37. Breeds on *Dicrastylis* sp. and *Lachnostachys* spp. (Lamiaceae). The smallest of the similarly colored Lamiaceae-feeding species including *W. cassis*, *W. dicrastyli*, *W. newcastelii*, *W. paradicrastyli*, and *W.*

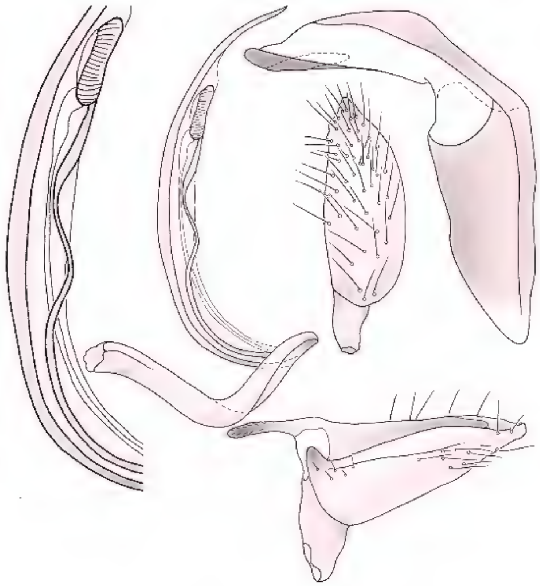


Fig. 15. *Wallabicoris lachnostachyos*, male genitalia (AMNH_PBI 00134786).

prostantheri and the Thymelaeaceae-feeding *W. pinocchii*. Smaller than all the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species significantly larger, mean total length 4.87, and with a broken secondary endosomal strap and with the left paramere not elongate.

DESCRIPTION: *Male*: Body relatively short and stout, weakly to distinctly ovoid, total length 3.29–3.80, ratio l/w = 2.73. COLORATION (pl. 2): Pronotum unicolorous pale, nearly white; hemelytron unicolorous pale, nearly white markings on cuneus absent; membrane unicolorous pale with most of extreme base unicolorous with remainder, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.21 (fig. 14A); antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space small, ratio iod/wh = 0.53; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium very long, reaching well onto pygophore. GENITALIA (figs. 14D–F, 15): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.92; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.11; body rounded laterally; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex tapered.

ETYMOLOGY: Named for the host genus, *Lachnostachys* Hooker (Lamiaceae).

HOSTS: Recorded from *Lachnostachys eriobotrya* (F. Muell.) Druce, *Lachnostachys coolgardiensis* S. Moore (pl. 9A), and *Dicrastylis fulva* forma *fulva* Harv. (Lamiaceae) (pl. 8D).

DISTRIBUTION (map 1): Known from the Goldfields and adjacent west-coastal heathland areas in Western Australia.

DISCUSSION: The known distribution of *W. lachnostachyos* corresponds closely with the distributions of its known hosts in the Goldfields/Kalbarri region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** Kalbarri National Park, 7 km E of Kalbarri, 27.68008°S 114.2386°E, 400 m, 29

Oct 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. field ID PERTH 05120497, 1♂ (AMNH_PBI 00136086) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 11 km S of Eneabba on Brand Hiway, Eneabba Reserve, 29.91094°S 115.1175°E, 100 m, 21 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Lachnostachys eriobotrya* (F. Muell.) Druce (Lamiaceae), det. PERTH staff PERTH6989594, 4♂ (00369054–00369057), 3♀ (00369058–00369060) (AMNH). 24 km W of Sandstone, 28.01426°S 119.0474°E, 650 m, 26 Oct 1996, Schuh and Cassis, *Lachnostachys coolgardiensis* S. Moore (Chloanthaceae), det. PERTH staff PERTH 05095174, 1♂ (00088003), 4♀ (00088004–00088007) (AM). Brand Hiway 3.2 km S of Rocky Springs Road, 29.94°S 115.268°E, 150 m, 01 Nov 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. field ID PERTH 05120497, 5♂ (00087853–00087857), 5♀ (00087864–00087868) (AM), 10♂ (00134784–00134791–00134792, 00134795), 9♀ (00134798–00134803, 00134805, 00134813, 00134817) (AMNH), 6♂ (00087851–00087852, 00134793–00134794, 00134796–00134797), 13♀ (00087862–00087863, 00134804, 00134806–00134812, 00134814–00134816) (WAMP). Kalbarri National Park, 7 km E of Kalbarri, 27.68008°S 114.2386°E, 400 m, 29 Oct 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. Field ID PERTH 05120497, 13♂ (00087458, 00087960–00087971), 10♀ (00087972–00087981) (AM), 16♂ (00136084–00136085, 00136087–00136095–00136097–00136100), 8♀ (00136109–00136114, 00136123, 00136125) (AMNH), 11♂ (00087731–00087733, 00136101–00136108), 22♀ (00087734–00087741, 00136115–00136121–00136122, 00136124, 00136126–00136130) (WAMP). Kalbarri National Park, Z-Bend Road, 27.66975°S 114.2841°E, 400 m, 29 Oct 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. PERTH staff PERTH 05120497, 6♂ (00087188, 00089716–00089720), 8♀ (00089731–00089738) (AM), 17♂ (00136028–00136030–00136043–00136044), 13♀ (00136055–00136064–00136066, 00136135) (AMNH), 21♂ (00089721–00089730, 00089743, 00136045–00136054), 29♀ (00089739–00089752, 00136067–00136074, 00136131–00136134, 00136136–00136138) (WAMP).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 11 km S of Eneabba on Brand Hiway, Eneabba Reserve, 29.91094°S 115.1175°E, 100 m, 21 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Lachnostachys eriobotrya* (F. Muell.) Druce (Lamiaceae), det. PERTH staff PERTH6989-594, 15♂ (00090883–00090888–MNH_PBI 00090890–00090897), 1 nymph (00369061) (AMNH), 5♂ (00090878–00090882), 9♀ (00090898–00090906) (UNSW). Brand Hiway 3.2 km S of Rocky Springs Road, 29.94°S 115.268°E, 150 m, 01 Nov 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. field ID PERTH 05120497, 4♀ (00087876–00087879), 3 nymphs (00087880–00087882) (AM), 4♂ (00087858–00087861), 7♀ (00087869–00087875) (UNSW). Kalbarri National Park, 7 km E of Kalbarri, 27.68008°S 114.2386°E, 400 m, 29 Oct 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. field ID PERTH 05120497, 7♂ (00135939–00135945), 16♀ (00135946–00135961) (AMNH). Kalbarri National Park, Z-Bend Road, 27.66975°S 114.2841°E, 400 m, 29 Oct 1996, Schuh and Cassis, *Lachnostachys eriobotrya* (F. Muell.) Druce (Chloanthaceae), det. PERTH staff PERTH 05120497, 9♀ (00136075–00136083), 3 nymphs (00132026–00132028) (AMNH), 4♂ (00132022–00132025), 4♀ (00132035–00132038) (CNC), 5♂ (00132013–00132017), 3♀ (00132029–00132031) (USNM), 4♂ (00132018–00132021), 3♀ (00132032–00132034) (ZISP). Kalbarri National Park, Z-Bend Road, 27.64166°S 114.4569°E, 450 m, 28 Oct 1996, Schuh and Cassis, *Dicrastylis fulva* forma *fulva* Harv. (Chloanthaceae), det. PERTH staff PERTH 05120500, 3♂ (00136139–00136141), 3♀ (00136144–00136146), 2 nymphs (00136142, 00136143) (AMNH).

Wallabicoris maralinga, new species
Figure 16; map 4; plate 2

DIAGNOSIS: Recognized among those species with heavily yellow coloration by the nearly uniform but not intensely yellow dorsum (pl. 2), by the moderate size, mean total length 4.99, the head rather strongly projecting beyond the anterior margin of the eyes, ratio head length/head width 2.64, the left paramere relatively

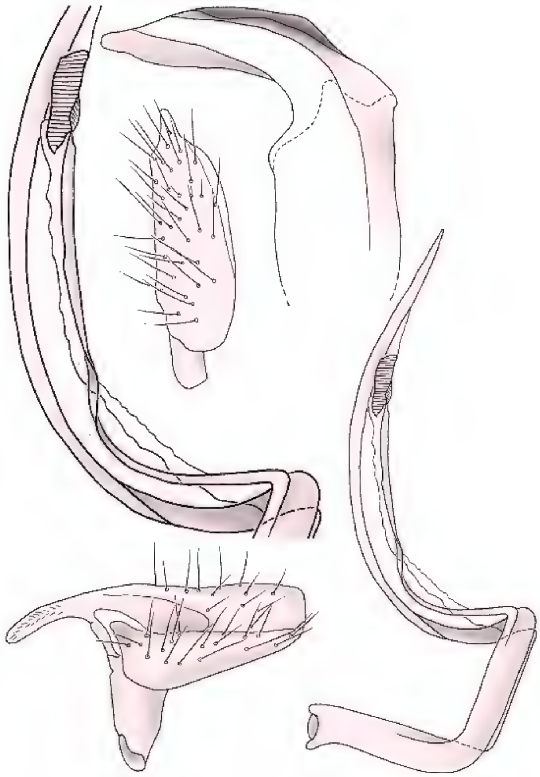


Fig. 16. *Wallabicoris maralinga*, male genitalia (AMNH_PBI 00173969).

short and deep bodied and only moderately projecting beyond margin of pygophore (fig. 16), and the secondary endosomal strap with a broad, weak, submedial undulation (fig. 16). Host unknown. Similar to *W. chrysocephali* and *W. rutidosi* in the relatively short, deep-bodied left paramere only moderately projecting beyond the margin of the pygophore, but coloration of dorsum in *W. rutidosi* not so uniformly yellow in many specimens. Distinguished from *W. sandstonensis* and *W. waitzii* by the much more elongate left paramere in those species projecting well beyond the margin of the pygophore, and the longer, more slender body, and more intensely yellow coloration in *W. waitzii*. Potentially confused with *W. commoni*, that species also with uniform yellowish coloration, but larger with a mean total length of 5.60; secondary endosomal strap in with a broad subbasal undulation similar to that seen in *W. maralinga*, but left paramere in *W. commoni* open over most of dorsal surface and more deep bodied.

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 4.32–5.38, ratio l/w = 3.19. COLORATION (pl. 2): Pronotum yellow to weakly orange with a longitudinal medial pale stripe; hemelytron mostly yellow to weakly orange markings on cuneus present as weak infuscation on posterior half; membrane weakly fumose on basal half, more strongly fumose on posterior half, extreme base pale, veins white; venter light yellow; antennal segment 1 unicolorous pale, with pale medial seta; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 2.80; antennal fossa with ventral margin 2 diameters above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.37; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 16): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.40; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly

elevated. **Right Paramere:** Body short and broad, ratio lrp/wrp 2.73; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the type locality, Maralinga Village.

HOSTS: Unknown. Probably breeding on Asteraceae with yellow flowers.

DISTRIBUTION (map 4): Known only from the type locality, located on the Nullarbor Plain near the south coast of South Australia.

HOLOTYPE: **AUSTRALIA: South Australia:** Maralinga Village, 30.158°S 131.579°E, 08 Oct 1956, F.L. Hill, 1♂ (AMNH_PBI 00173961) (BMNH).

PARATYPES: **AUSTRALIA: South Australia:** Maralinga Village, 30.158°S 131.579°E, 08 Oct 1956, F.L. Hill, 2♂ (00173968, 00173969) (AMNH), 7♂ (00173960, 00173962–00173967), 2♀ (00173970, 00173971) (BMNH).

Wallabicoris newcastelii, new species
Figure 17; map 1; plate 2

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 2), the moderate size, with a mean total length of 4.57, and the structure of the male genitalia, the apical portion of the endosoma elongate and nearly erect, the secondary strap of the endosoma complete and with a broad submedial undulation, and the left paramere greatly elongate, with a low shoulder on the posterior process, open over most of the dorsal surface (fig. 17), and greatly exceeding the margin of the pygophore in repose. Head only moderately projecting beyond anterior margin of eyes, mean ratio width head/length head 3.57. Breeds on *Dicrastylis* spp. and *Newcastelii* sp. (Lamiaceae). Size moderate among the similarly colored Lamiaceae-feeding species, larger than *W. cassis*, *W. lachnostachyos*, and *W. paradicrastyli*; smaller than *W. dicrastyli* and *W. prostantheri* and the Thymelaeaceae-feeding *W. pinocchii*. Smaller than all the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species slightly larger, mean total length 4.87, and with a broken secondary endosomal strap and the left paramere not elongate.

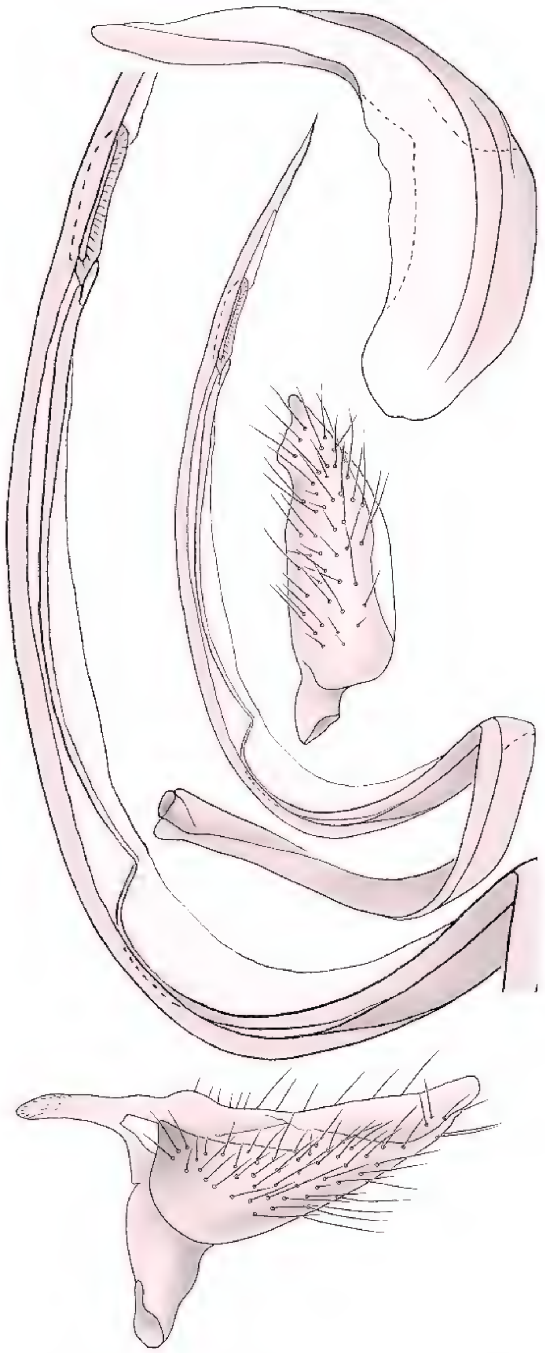


Fig. 17. *Wallabicoris newcastelii*, male genitalia (AMNH_PBI 00135877).

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 4.08–5.25, ratio l/w = 2.95. COLORATION (pl. 2): Pronotum unicolorous pale, nearly white;

hemelytron unicolorous pale, nearly white; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, especially within cells, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with pale medial seta; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.44; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space small, ratio iod/wh = 0.53; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium reaching to margin of pygophore. GENITALIA (fig. 17): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.67; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising slightly forward of posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.44; body rounded laterally; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for its host genus, *Newcastelia* F. Muell. (Lamiaceae).

HOSTS: Recorded from *Newcastelia viscida* E. Pritz. (pl. 9B), *N. insignis* E. Pritz., *Dicrastylis parvifolia* F. Muell. (pl. 8C), and *Dicrastylis fulva* forma *fulva* Harv. (Lamiaceae) (pl. 8D).

DISTRIBUTION (map 1): Known from the Goldfields and adjacent west-coastal region of Western Australia.

DISCUSSION: The known distribution of *W. newcastelii* corresponds closely with the distributions of its recorded hosts in the Goldfields/Kalbarri region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 28 km S of Menzies (3.5 km E of Hiway), 29.91917°S 121.1514°E, 500 m, 25 Oct 1996, Schuh and Cassis, *Newcastelia viscida* E. Pritz. (Chloanthaceae), det. PERTH staff PERTH 05095077, 1♂ (AMNH_PBI 00133318) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 21 km E of Kalgoorlie near transcon. railroad, 30.87541°S 121.69346°E, 500 m, 23 Oct 1996, Schuh and Cassis, Light Trap, 2♀ (00089216, 00089217) (AM). 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 1♂ (00090303), 1♀ (00090304) (AM). 28 km S of Menzies (3.5 km E of Hiway), 29.91917°S 121.1514°E, 500 m, 25 Oct 1996, Schuh and Cassis, 10♂ (00133306–00133311, 00133315–00133317, 00133319), 3♀ (00133324, 00134631–00134632) (AMNH), 3♂ (00133312–00133314) (WAMP). 60.5 km SE of Southern Cross, 31.65169°S 119.4957°E, 440 m, 04 Dec 1997, Schuh, Cassis, Brailovsky, Asquith, *Dicrastylis parvifolia* F. Muell. (Chloanthaceae), det. PERTH staff PERTH 05055954, 3♂ (00087106, 00373027–00373028), 2♀ (00373029, 00373030) (AM), 4♂ (00130767–00130768–00130770), 3♀ (00130771–00130773) (AMNH). Kalbarri National Park, Z-Bend Road, 27.64166°S 114.4569°E, 450 m, 28 Oct 1996, Schuh and Cassis, *Dicrastylis fulva* forma *fulva* Harv. (Chloanthaceae), det. PERTH staff PERTH 05120500, 1♂ (00090075) (AM), 3♂ (00135867, 00135874, 00135877), 2♀ (00135890, 00135899) (AMNH), 2♂ (00135873, 00135876) (UNSW), 5♂ (00135868–00135872) (WAMP).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 28 km S of Menzies,

29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 43♀ (00090305–00090328, 00090338–00090356), 17 nymphs (00090357–00090373) (AM), 5 nymphs (00133147–00133151) (AMNH), 9♀ (00090329–00090337) (WAMP). 28 km S of Menzies (3.5 km E of Hiway), 29.91917°S 121.1514°E, 500 m, 25 Oct 1996, Schuh and Cassis, *Newcastelia viscida* E. Pritz. (Chloanthaceae), det. PERTH staff PERTH 05095077, 10♀ (00133320–00133-323, 00133325–00133328, 00134629–00134630) (AMNH), 4♀ (00134633–00134636) (UNSW). 60.5 km SE of Southern Cross, 31.65169°S 119.4957°E, 440 m, 04 Dec 1997, Schuh, Cassis, Brailovsky, Asquith, *Dicrastylis parvifolia* F. Muell. (Chloanthaceae), det. PERTH staff PERTH 05055954, 1♀ (00087107) (AM). Kalbarri National Park, Z-Bend Road, 27.64166°S 114.4569°E, 450 m, 28 Oct 1996, Schuh and Cassis, *Dicrastylis fulva* forma *fulva* Harv. (Chloanthaceae), det. PERTH staff PERTH 05120500, 1♂ (00090079), 16♀ (00090078, 00090080–00090094), 1 nymph (00090103) (AM), 34♀ (00135878–00135-889, 00135891–00135898, 00135900–00135913) (AMNH), 3♀ (00090095, 00135914–00135915) (UNSW), 7♀ (00090096–00090102) (WAMP).

Wallabicoris norsemanius, new species
Figure 18; map 4; plate 2

DIAGNOSIS: Recognized by the large size and the elongate slender body form, total length 5.55, ratio length/width 3.82, the pale setae on the dorsum, the elongate pattern of coloration on the dorsum (pl. 2), and the form of the male genitalia, the secondary endosomal strap with a short submedial twist, the elongate left paramere, and the broadly lanceolate right paramere (fig. 18). Separated from other large species with a large elongate body as follows: from *W. coolabah* by quadrate color pattern and the short left paramere in that species; from *W. craspedii* by the heavy black setae on the dorsum, uniform coloration of the dorsum, and the broad submedial undulation in the secondary endosomal strap in that species; and from *W. uptoni* by the quadrate color patter on the dorsum, the moderately broad subbasal undulation in the secondary endosomal strap, and the somewhat less elongate left paramere.

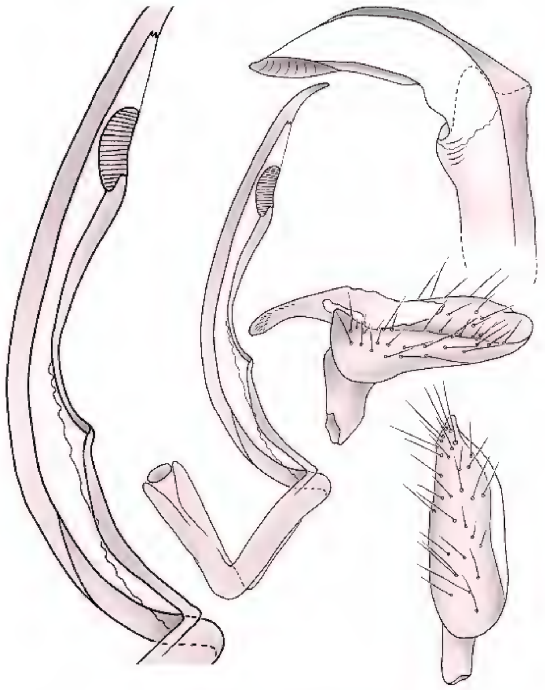


Fig. 18. *Wallabicoris norsemanius*, male genitalia (AMNH_PBI 00168780).

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.51–5.59, ratio l/w = 3.82. COLORATION (pl. 2): Pronotum with anterior lobe mostly pale, posterior lobe nearly unicolorous red-brown with a pale median longitudinal stripe; hemelytron mostly pale, weakly reddish, clavus red brown on medial two thirds; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly to strongly fumose over entire area, veins white; venter heavily infuscate, at least on mesopleuron and abdomen; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora mostly red-brown with many brown or black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with brown setae intermixed with pale setae on hemleytron, and with some sericeous or woolly setae.

STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.00; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.42; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 18): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.80; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.34; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the town of Norseman, Western Australia, near the type locality.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known only from the type locality in the Goldfields region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 61 mi E of Norseman, 32.03°S 122.77°E, 29 Apr 1968, I.F.B. Common & M.S. Upton, 1♂ (AMNH_PBI 00168781) (ANIC).

PARATYPE: **AUSTRALIA: Western Australia:** 61 mi E of Norseman, 32.03°S 122.77°E, 29 Apr 1968, I.F.B. Common & M.S. Upton, 1♂ (00168780) (AMNH).

Wallabicoris olearii, new species
Figure 19; map 3; plate 3

DIAGNOSIS: Recognized by the pale coloration of the body and appendages (pl. 3), the

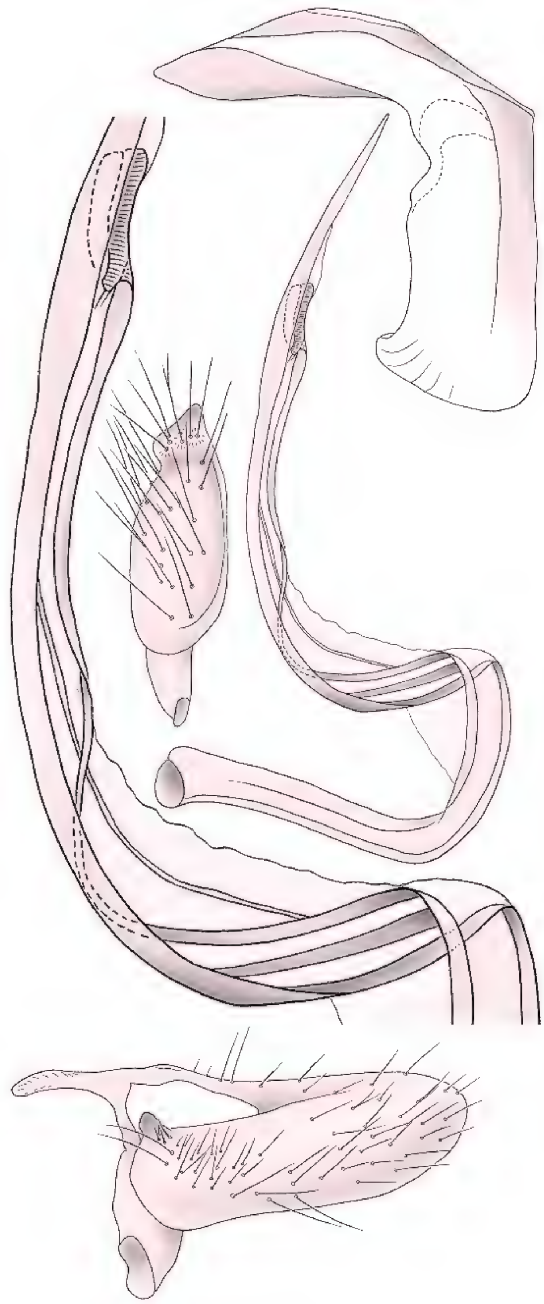


Fig. 19. *Wallabicoris olearii*, male genitalia (AMNH_PBI 00173972).

moderately large size, mean total length 5.31, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad submedial undulation and the left paramere elongate, deep bodied, and substantially exceeding the margin of the pygophore in repose, and without an elevated shoulder on the posterior process; right paramere relatively short and broad, with a distinct protuberance subapically on the posterior margin (fig. 19). Breeds on *Olearia axillaris* (Asteraceae). Similar in size and coloration to *W. baldersoni*, *W. ozothamni*, and *W. schwartzi*; distinguished from *W. ozothamni* by the shorter left paramere with an elevated shoulder on the posterior process in that species. Significantly larger than the pale Lamiaceae feeders such as *W. cassisi*, *W. lachnostachyos*, *W. newcastelii*, and *W. paradicrastyli*, but mean total length somewhat greater than in the pale Thymelaeaceae-feeder *W. pinocchii*.

DESCRIPTION: Body moderately elongate, parallel sided (l/w = 3.11). COLORATION: Pronotum unicolorous pale; scutellum unicolorous with remainder of dorsum; hemelytron unicolorous white; markings on cuneus absent; membrane unicolorous pale, extreme base unicolorous with remainder, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with pale medial seta; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark without dark spots at bases; SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae; STRUCTURE: **Head:** Weakly projecting, ratio wh/lh = 4.21; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.45; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen up to midpoint; GENITALIA: **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.50; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore; secondary endosomal strap extent reaching to level of secondary gonopore; secondary endosomal strap curvature with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma; fingerlike protuberance at distal margin of secondary gonopore absent. **Phallotheca:** More or less right angulate; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process direction directed vertically; posterior process appearing tubular, fingerlike; posterior process shoulder without strong shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body short, broad, ratio lrp/wrp 2.54; body shape rounded laterally; posterior margin with a distinct protuberance subapically; body elevation elevated at juncture with base; apex tapered.

ETYMOLOGY: Named for the host genus *Olearia* Moench. (Asteraceae: Astereae).

HOSTS: Recorded from *Olearia axillaris* (DC.) Benth. (Asteraceae).

DISTRIBUTION (map 3): Known from a single locality on the west coast of Western Australia.

DISCUSSION: The distribution of *Olearia axillaris* is almost exclusively costal, ranging from Port Hedland south and east to Sydney. Although we would not predict such a broad distribution for *W. olearii*, further collecting on *Olearia axillaris* will undoubtedly increase the known range of the species.

HOLOTYPE: **AUSTRALIA: Western Australia:** Geraldton Drummond Cove, 28.66666°S 114.6°E, 16 May 1973, N. McFarland, *Olearia axillaris* (Asteraceae), 1♂ (AMNH_PBI 00173976) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** Geraldton Drummond Cove, 28.66666°S 114.6°E, 16 May 1973, N. McFarland, *Olearia axillaris* (Asteraceae), 1♂, 1♀ (00173972) (AMNH), *Olearia axillaris* (Asteraceae), 3♂, 3♀ (00173973–00173975) (BMNH), 1♀ (00173976) (WAMP).

Wallabicoris ozothamni, new species
Figures 20, 21; map 3; plate 3

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 3), the moderately large size, with a mean total length of 5.18, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad submedial undulation and the left paramere relatively short, with an elevated shoulder on the posterior process, open over most of the dorsal surface (fig. 21), and only weakly exceeding the margin of the pygophore in repose (fig. 20F). Breeds on *Ozothamnus diosmifolius*. Smaller than the similarly colored Asteraceae-feeding *W. baldersoni*, *W. olearii*, and *W. schwartzi*; similar in size to the Asteraceae-feeding *W. helichrysi* and the Lamiaceae-feeding *W. dicrastyli*; somewhat larger than the Thymelaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachy*os, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*. Potentially confused with *W. rutidosi*, but that species somewhat smaller, mean total length 4.87, and with a broken secondary endosomal strap.

DESCRIPTION: *Male*: Body moderately elongate, nearly parallel sided, total length 4.89–5.08, ratio l/w = 3.18. COLORATION (pl. 3): Pronotum unicolorous pale; hemelytron mostly pale, corium and clavus with some dirty areas; markings on cuneus absent; membrane with most of extreme base pale, remainder partially fumose, especially around posterior margin and within cells, veins white; venter unicolorous pale or mostly so; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark with or without small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.67 (fig. 20A); antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.40; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (figs. 20E, F, 21): **Endosoma:** Base moderately long with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.88; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body short and broad, ratio lrp/wrp 2.63; body rounded laterally; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus *Ozothamnus* R. Br. (Asteraceae).

HOSTS: Recorded from *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae: Gnaphalieae) (pl. 7A).

DISTRIBUTION (map 3): Most known specimens from coastal New South Wales, but also reported from the locations east of the Great Dividing Range in New South Wales and western Victoria.

DISCUSSION: The known distribution of *W. ozothamni* corresponds closely with the distributions of its known host in the Great Dividing Range of New South Wales and Victoria.

HOLOTYPE: **AUSTRALIA: New South Wales:** just N of Bungwahl, Smiths Lake, 33 km S of Forster, 32.38334°S 152.5°E, 5 m, 21 Oct 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. J. Everett May 1996 NSW 395912, 1♂ (AMNH_PBI 00090415) (AM).

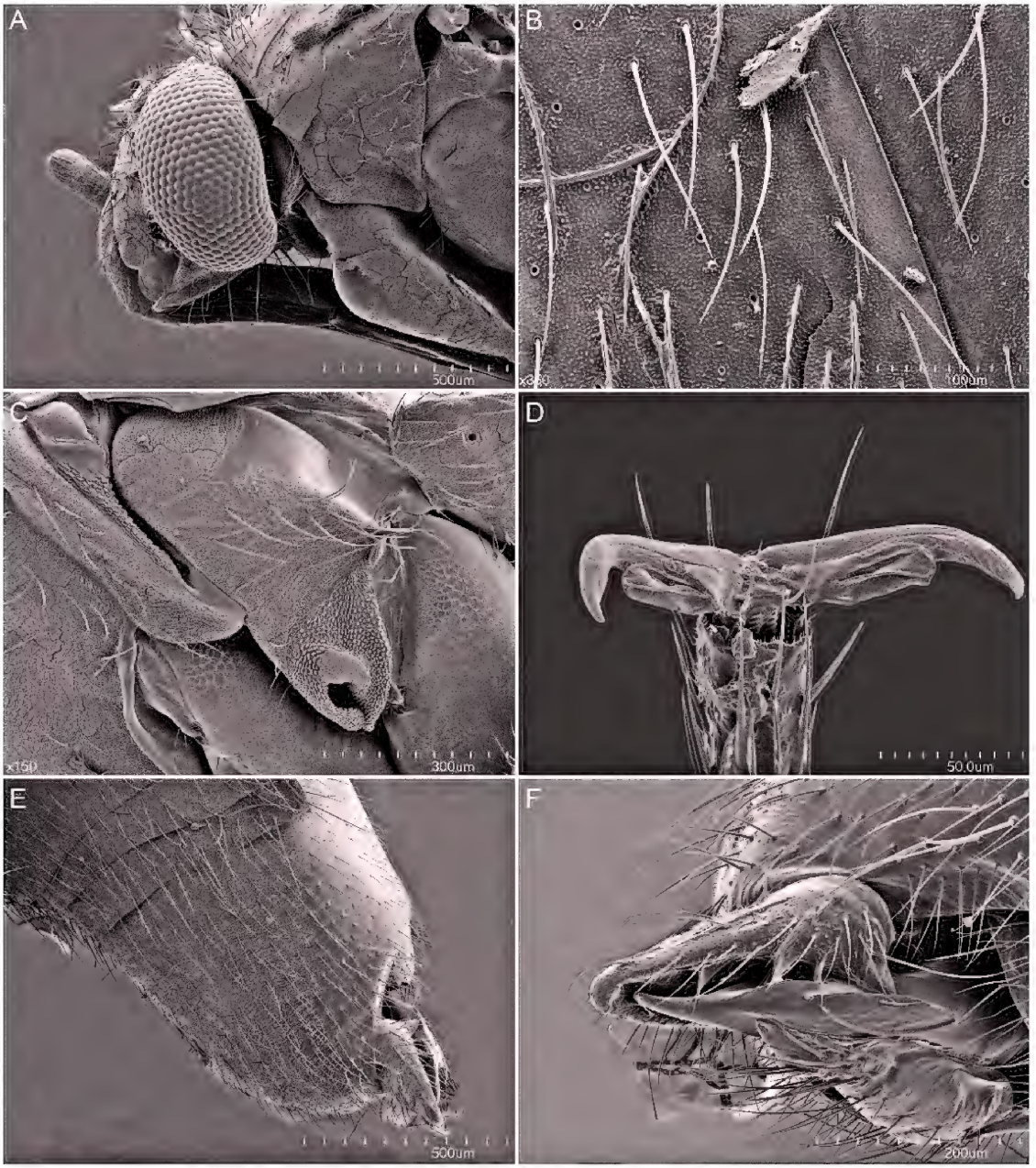


Fig. 20. *Wallabicoris ozothamni*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium adjacent to claval suture. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in ventral view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00132766).

PARATYPES: **AUSTRALIA: New South Wales:** Myall Lakes National Park, 10.3 km S Seal Rocks Rd on Hawks Nest Rd, 32.50001°S 152.35°E, 5 m, 20 Oct 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. J. Everett May 1996 NSW 395908, 2♂ (00090375, 00090376) (AM). Just N of Bungwahl, Smiths Lake, 33 km S of Forster, 32.38334°S 152.5°E, 5 m, 21 Oct 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.)

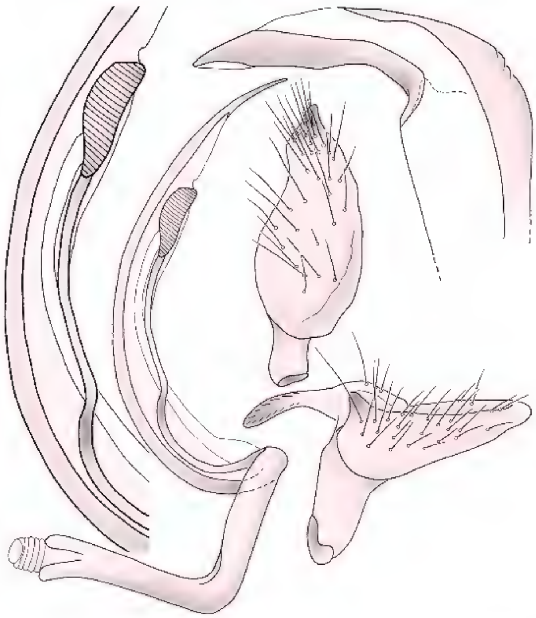


Fig. 21. *Wallabicoris ozothamni*, male genitalia (AMNH_PBI 00132782).

DC. (Asteraceae), det. J. Everett May 1996 NSW 395912, 52♂ (00090378, 00090380–00090382, 00090384–00090409, 00090412–00090414, 00090416–00090424, 00090426–00090435), 36♀ (00090437–00090447, 00090449–00090453, 00090455–00090458, 00090460–00090475) (AM), 117♂ (00090377, 00090379, 00090383, 00090425, 00101996–00101998, 00132039–00132068, 00132756–00132782, 00133010–00133053, 00133069–00133077), 40♀ (00088958, 00090448, 00090454, 00090459, 00132069–00132078–00132080–00132086, 00133054–00133068, 00133078–00133080) (AMNH), 3♂ (00132783–00132785), 2♀ (00132795, 00132796) (ANIC), 3♂ (00132792–00132794), 2♀ (00132801, 00132802) (CNC), 7♂ (00088951–00088957), 4♀ (00088959–00088962) (UNSW), 3♂ (00132786–00132788), 2♀ (00132797, 00132798) (USNM), 3♂ (00132789–00132791), 2♀ (00132799, 00132800) (ZISP).

Other Specimens Examined: **AUSTRALIA: New South Wales:** 53 km SE of Braidwood, 35.71668°S 149.9°E, 150 m, 10 Nov 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. J. Everett 1996 NSW 396003, 7♂ (00090374, 00090410–00090411, 00131682, 00131686–00131687, 00131689), 2♀ (00090436, 00131694), 2 nymphs (00131690, 00131691) (AM), 1♂ (00131688), 1♀ (00131692) (AMNH). St. Forest W of Ulladulla, above Carters Creek, 35.5152°S 150.0346°E, 200 m, 11 Nov 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. field ID NSW 396003, 1♂ (00132968), 3 nymphs (00132970–00132972) (AM), 1♂ (00132969) (AMNH), 1♂ (00132967), 1♀ (00132973) (UNSW). State Forest, Yadburra W of Milton, 33.7735°S 149.1012°E, 50 m, 11 Nov 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. J. Everett 1996 NSW 396006, 10♂ (00088937–00088946) (AM), 5♂ (00131680–00131681, 00131683–00131685), 2♀ (00131693, 00131695) (AMNH), 4♀ (00088947–00088950) (UNSW). just N of Bungwahl, Smiths Lake, 33 km S of Forster, 32.38334°S 152.5°E, 5 m, 21 Oct 1995, Schuh and Cassis, *Ozothamnus diosmifolius* (Vent.) DC. (Asteraceae), det. J. Everett May 1996 NSW 395912, 22 nymphs (00088963–00088966, 00090476–00090493) (AM). **Victoria:** Hattah Lakes National Park, 34.703°S 142.29°E, 03 Nov 1966, I.F.B. Common & M.S. Upton, 2♂ (00168773, 00168774) (ANIC).

Wallabicoris paradicrastyli, new species
Figure 22; map 1; plate 3

Diagnosis: Recognized by the chalk-white coloration of the body and appendages (pl. 3), the small size, with a mean total length of 3.83, and the structure of the male genitalia, the apical portion of the endosoma short and weakly curving, the secondary strap of the endosoma complete and with a short submedial twist, and the left paramere very short, deep bodied, with a low shoulder on the posterior process, closed over most of the dorsal surface (fig. 22), and only slightly exceeding the margin of the pygophore in repose. Head only weakly projecting beyond anterior margin of eyes, mean ratio width head/length head 3.81. Breeds on *Dicrastylis* spp. (Lamiaceae). One of the smallest of the similarly colored Lamiaceae and Thymelaeaceae-feeding species, only *W. lachnostachyos* being smaller. Smaller than all of the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species much larger, mean total length 4.87, and with a broken secondary endosomal strap.

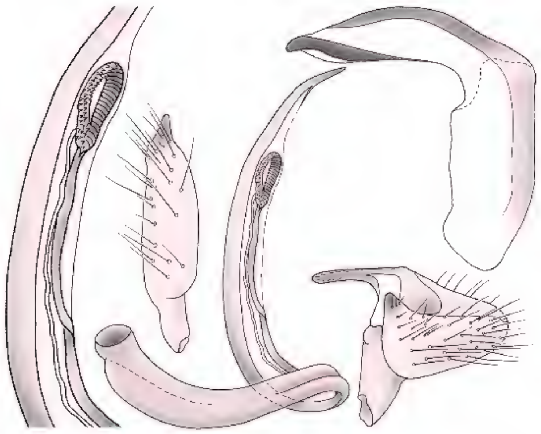


Fig. 22. *Wallabicoris paradicrastyli*, male genitalia (AMNH_PBI 00128685).

DESCRIPTION: *Male*: Body relatively short, distinctly ovoid, total length 3.65–4.15, ratio l/w = 2.75. COLORATION (pl. 3): Pronotum unicolorous pale, nearly white; hemelytron mostly pale, nearly white; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, especially cells, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.74; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space small, ratio iod/wh = 0.56; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium reaching to midpoint of abdomen. GENITALIA (fig. 22): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.88; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.12; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus *Dicrastylis* in combination with the Greek prefix *para*, "near."

HOSTS: Recorded from *Dicrastylis beveridgei* F. Muell., *Dicrastylis gilesii* var. *gilesii* f. *densa* Munir, and *Dicrastylis morrisonii* Munir (Lamiaceae).

DISTRIBUTION (map 1): Known from the McDonnell Ranges of central Australia and the Goldfields region of Western Australia.

DISCUSSION: The known distribution of the hosts of *W. paradicrastyli* is restricted to Central Australia, but extends substantially farther south than our records for *W. dicrastyli*. We might then expect a broader distribution for this species, including more of western South Australia.

HOLOTYPE: **AUSTRALIA: Northern Territory:** 193 km E of Stuart Hiway on Lasseter Hiway, 25.21667°S 131.4776°E, 519 m, 31 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Dicrastylis beveridgei* F. Muell. (Lamiaceae), det. NSW staff NSW666267, 1♂ (AMNH_PBI 00098008) (NTM).

PARATYPES: **AUSTRALIA: Northern Territory:** 17.5 km E of Stuart Hiway on Horseshoe Bend Rd, 25.16667°S 133.3223°E, 412 m, 29 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Dicrastylis beveridgei* var. *beveridgei* F. Muell. (Lamiaceae), det. NSW staff NSW658404, 3♂ (00090861–00090863), 8♀

(00090866–00090873) (AM), 2♂ (00090864–00090865), 4♀ (00090874–00090877) (UNSW). 35.4 km W of Uluru at Kata Tjuta jct on Lasseter Hiway, 25.34361°S 130.68916°E, 592 m, 01 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Dicrastylis gilesii* var. *gilesii* f. densa Munir (Lamiaceae), det. NSW staff NSW666280, 4♂ (00097940–00097942, 00097944), 3♀ (00097945, 00097946–00097948) (AMNH), 1♂ (00097943), 1♀ (00097949) (NTM). 193 km E of Stuart Hiway on Lasseter Hiway, 25.21667°S 131.4776°E, 519 m, 31 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Dicrastylis beveridgei* F. Muell. (Lamiaceae), det. NSW staff NSW666267, 5♂ (00098007, 00098009–00098012), 6♀ (00098013–00098018) (AMNH), 1♂ (00098006), 1♀ (00098019) (NTM). Kings Canyon, Watarrka National Park, 24.25001°S 131.5689°E, 633 m, 02 Nov 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Dicrastylis gilesii* var. *gilesii* f. densa Munir (Lamiaceae), det. NSW staff NSW666298, 2♂ (00181889–00181890), 1♀ (00181891) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 31.7 km W of Agnew toward Sandstone, 27.96227°S 120.4277°E, 800 m, 26 Oct 1996, Schuh and Cassis, *Dicrastylis morrisonii* Munir (Chloanthaceae), det. PERTH staff PERTH 05095204, 2♀ (00087189, 00089755) (AM), 4♂ (00128685–00128688), 4♀ (00128690–00128693), 1 nymph (00128689) (AMNH).

Wallabicoris pimelei, new species
Figure 23; map 4; plate 3

DIAGNOSIS: Recognized by the relatively small size, mean total length 3.98, the largely pale coloration with orange suffusion on the head, anterior lobe of pronotum, and scutellum, and the heavy, erect, black setae on the head and pronotum (pl. 3); secondary endosomal strap complete, smooth curving over entire length; left paramere short, blunt, deep bodied (fig. 23). Breeds on *Pimelea sericea* (Thymelaeaceae). Similar in size and coloration to *W. pomaderri*, but that species lacking the erect black setae on the head and pronotum and having an incomplete secondary endosomal strap.

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 3.81–4.11, ratio l/w = 3.03. COLORATION (pl. 3): Pronotum pale with a few brown spots; hemelytron mostly pale or yellow, corium and clavus with dirty areas; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, especially within cells, veins white; venter light yellow; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with suberect black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.75; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.48; eyes occupying entire height of head in lateral view (hg0–1/he20); labium very long, reaching well onto pygophore. GENITALIA (fig. 23): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate

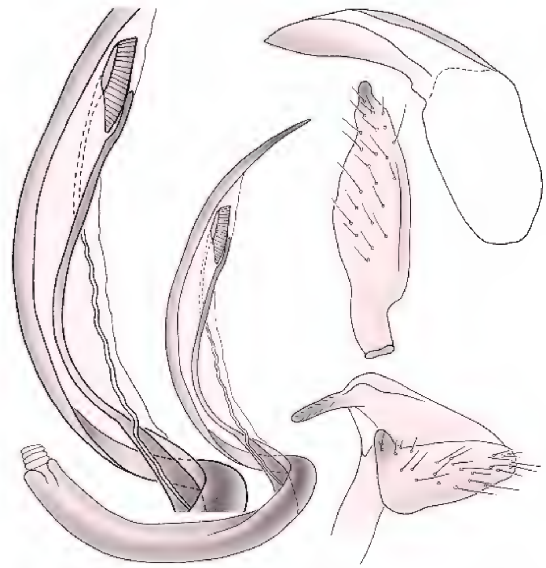


Fig. 23. *Wallabicoris pimelei*, male genitalia (AMNH_PBI 00194167).

apically, ratio lae/lsg 2.15; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, smoothly curving over entire length; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.61; body tapered from base to apex; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Pimelea* Banks and Sol. ex Gaertn. (Thymelaeaceae).

HOSTS: Recorded only from *Pimelea sericea* R. Br. (Thymelaeaceae) (pl. 12A, B).

DISTRIBUTION (map 4): Known only from the type locality in southeastern Tasmania.

DISCUSSION: The host of *W. pimelei* is restricted to Tasmania.

HOLOTYPE: **AUSTRALIA: Tasmania:** Mt. Wellington, the Pinnacle, 42.89555°S 147.2374°E, 1267 m, 15 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Pimelea sericea* R. Br. (Thymelaeaceae), det. NSW staff NSW658212, 1♂ (AMNH_PBI 00194161) (AM).

PARATYPES: **AUSTRALIA: Tasmania:** Mt. Wellington, the Pinnacle, 42.89555°S 147.2374°E, 1267 m, 15 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Pimelea sericea* R. Br. (Thymelaeaceae), det. NSW staff NSW658212, 4♂ (00194158, 00194160, 00194162, 00194164), 2♀ (00194168, 00194169) (AM), 15♂ (00194148–00194153–00194157, 00194163, 00194165–00194167), 3♀ (00194170–00194172) (AMNH).

Wallabicoris pinocchii, new species
Figures 24, 25; map 4; plate 3

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 3), the moderate size, with a mean total length of 4.99, and the structure of the male genitalia, the apical portion of the endosoma smoothly curving, relatively short proximad of the secondary gonopore and greatly elongate and nearly straight apicad of the secondary gonopore, the secondary strap of the endosoma complete and with a very broad undulation, and the left paramere moderately elongate, with a distinct shoulder on the posterior process, open over most of the dorsal surface (fig. 25), with a distinct tubular (fingerlike) apex, somewhat exceeding the margin of the pygophore in repose (fig. 24G), and the phallotheca with a distinct keel on the dorsal surface. Head conspicuously projecting beyond anterior margin of eyes, mean ratio width head/length head 3.35, interocular distance small, less than one-fourth width of head (mean 0.23). Breeds on *Pimelea* spp. (Thymelaeaceae). Size larger than all similarly colored species feeding on Lamiaceae, except *W. dicrastyli*. Smaller than all of the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species with a broken secondary endosomal strap, a short apex of the endosoma distad of the secondary gonopore, and a blunt apex on the left paramere, rather than the fingerlike projection seen in *W. pinocchii*.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 4.76–5.21, ratio (l/w = 3.54). COLORATION (pl. 3): Pronotum unicolorous pale; scutellum golden; hemelytron unicolorous pale; markings on cuneus absent; membrane unicolorous pale, extreme base unicolorous with remainder, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with erect and suberect black setae, especially on pronotum, without

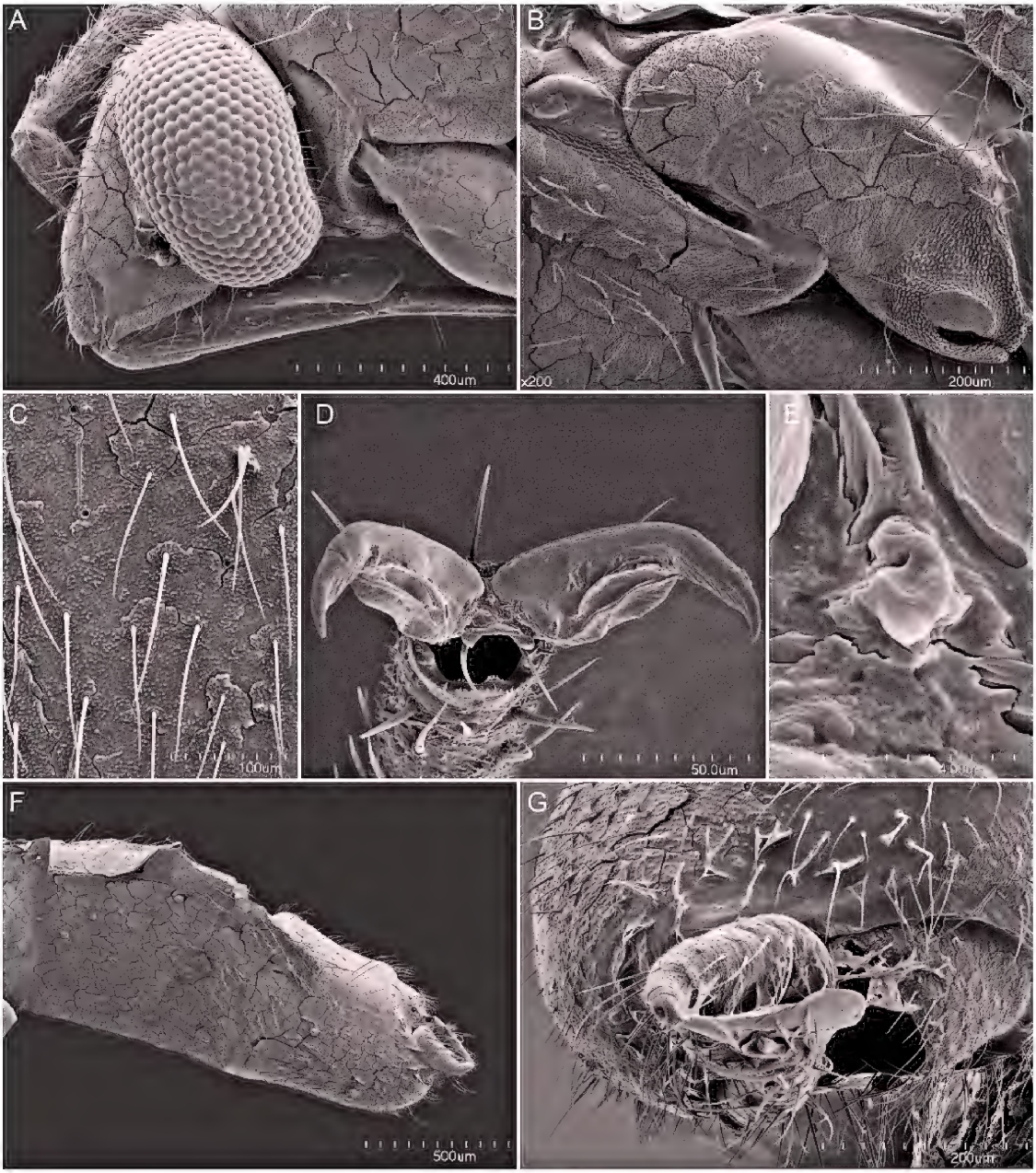


Fig. 24. *Wallabicoris pinocchii*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Mesothoracic spiracle and metathoracic scent-efferent system. **C.** Setae on corium adjacent to claval suture. **D.** Pretarsus in frontal view. **E.** Detail of dorsomedian sensillum (dorsal arolium). **F.** Abdomen in lateral view. **G.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00129219).

sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.11 (fig. 24A); antennal fossa with ventral margin 2 diameters above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.36; eyes occupying entire height of head in lateral view (hg0–1/he20); labium reaching to midpoint of abdomen. GENITALIA (fig. 25): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of

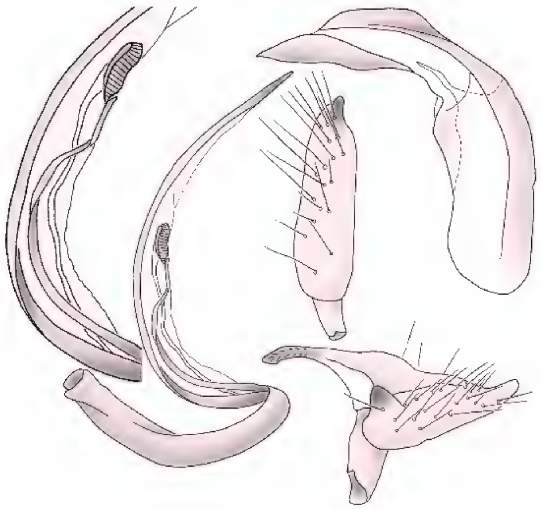


Fig. 25. *Wallabicoris pinocchii*, male genitalia (AMNH_PBI 00129216).

shaft smoothly curving; primary endosomal strap greatly elongate apically, ratio lae/lsg 5.50; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about one-half length; body tapered toward apex, apex elongate nipple-like; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.06; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the noselike protuberance on the apex of the left paramere, after the Pinocchio in Carlo Collodi's story for children.

HOSTS: Recorded from *Pimelea glauca* R. Br., and *Pimelea longiflora longiflora* R. Br. (pl. 12D), *Pimelea linifolia collina* (R. Br.) Threlfall (pl. 12C), and *Pimelea sylvestris* R. Br. (pl. 12E) (Thymelaeaceae). We put little credence in the record from *Cassytha racemosa* Nees (Lauraceae) as accurate, even though one of the specimens is a nymph; this apparently represents a mislabeling, with the evidence indicating that all occurrences at the site of the *Cassytha* records actually are from *Pimelea sylvestris*.

DISTRIBUTION (map 4): Known from far southwestern Western Australia and the Great Dividing Range in New South Wales.

DISCUSSION: *Pimelea longiflora* and *P. sylvestris* are restricted to the near coastal areas of extreme southwestern Western Australia. *Pimelea glauca* and *P. linifolia* are both very widely distributed in the wetter regions of South Australia, Victoria, Tasmania, New South Wales, and southern Queensland. On the basis of these distributions we would not expect to see much range expansion for *W. pinocchii* in Western Australia, but might see substantial expansion in the east. The issue of whether collections from the west and the east represent the same species may well be worth investigating, even though our examination of morphological characters offers no distinction among specimens from the two regions.

HOLOTYPE: **AUSTRALIA: Western Australia:** Point Rd Campground. Leeuwin Naturaliste National Park, 34.09361°S 115.01638°E, 50 m, 02 Dec 1998, G. Cassis, *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. WA Herbarium Staff PERTH 05227607, 1♂ (AMNH_PBI 00090108) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 2 km W of Caves Road, Leeuwin Naturaliste National Park, 34.1497°S 115.0657°E, 100 m, 04 Dec 1999, R.T. Schuh, G. Cassis, & R. Silveira, 3♂ (00129281–00129283), 6♀ (00129290–00129295) *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. PERTH staff PERTH 05671140, 30♂ (00129208–00129213–00129218–00129221, 00129265–00129280) 10♀ (00129232–00129236–00129239–00129241) (AMNH), 6♂ (00129222–00129227) 7♀ (00129296–00129302) (WAMP). 10.1 km W of Broke Inlet Road on Chesapeak Road, D'Entrecasteaux National Park,

34.85263°S 116.3945°E, 20 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Pimelea longiflora longiflora* R. Br. (Thymelaeaceae), det. PERTH staff PERTH 05672104, 17♂ (00087415, 00087577, 00090177–00090182, 00090184–00090186, 00090188–00090193), 19♀ (00090514–00090530, 00090539–00090540) (AM), 1♂ (00090171), 3♀ (00090533–00090535) (CNC), 6♂ (00090169, 00090172, 00090183, 00090187, 00090194–00090195), 2♀ (00090531, 00090532) (UNSW), 1♂ (00090170), 3♀ (00090536–00090538) (USNM), 4♂ (00090173–00090176), 14♀ (00090541–00090554) (WAMP), 1♂ (00087416) (ZISP). Brand Hiway 18.8 km S of jct with Cervantes Rd, 30.4713°S 115.3642°E, 203 m, 07 Nov 2004, Cassis, Weirauch, Tatarnic, Symonds, *Pimelea imbricata var. piligera* (Benth.) Diels (Thymelaeaceae), det. PERTH staff PERTH6988172, 5♂ (00369037–00369041), 7♀ (00369042–00369048) (AMNH). Point Rd Campground. Leeuwin Naturaliste National Park, 34.09361°S 115.02416°E, 74 m, 03 Dec 1998, G. Cassis, *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. Perth Staff PERTH05227607, 1♂ (00087426) (AM), *Cassytha racemosa* Nees (Lauraceae), det. WA Herbarium Staff PERTH 05227259, 3♀ (00090166–00090168) (ZISP). Point Rd Campground. Leeuwin Naturaliste National Park, 34.09361°S 115.01638°E, 50 m, 02 Dec 1998, G. Cassis, 1♂ (00087104), 1♀ (00087105) *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. WA Herbarium Staff PERTH 05227607, 5♂ (00090104–00090107, 00090109), 12♀ (00090119–00090130) (AM), 1♂ (00090110), 8♀ (00090111–00090118) (WAMP).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: New South Wales:** 3 km E of Retreat (W of Uralla), 30.63335°S 151.1167°E, 900 m, 23 Oct 1995, Schuh and Cassis, *Pimelea linifolia collina* (R. Br.) Threlfall (Thymelaeaceae), det. D.C. Godden 1996 NSW 395917, 5♂ (00089212, 00132214–00132217), 10♀ (00089210, 00132219–00132227), 2 nymphs (00089211, 00132218) (AM), 1♀ (00132228) (AMNH). 7 km S of Mt. Kaputar, 30.281°S 150.167°E, 24 Oct 1995, Schuh and Cassis, *Pimelea glauca* R. Br. (Thymelaeaceae), det. D.C. Godden NSW 398562, 1♀ (00089214) (AM). Ulladulla, 35.21°S 150.29°E, 29 May 1989, G. Cassis, *Pimelea* sp. (Thymelaeaceae), 1♂ (00089215), 1♀ (00089213) (AM). **Western Australia:** 2 km W of Caves Road, Leeuwin Naturaliste National Park, 34.1497°S 115.0657°E, 100 m, 04 Dec 1999, R.T. Schuh, G. Cassis, & R. Silveira, 6 nymphs (00129284–00129289) *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. PERTH staff PERTH 05671140, 4 nymphs (00129228–00129231) (AMNH). 10.1 km W of Broke Inlet Road on Chesapeak Road, D'Entrecasteaux National Park, 34.85263°S 116.3945°E, 20 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Pimelea longiflora longiflora* R. Br. (Thymelaeaceae), det. PERTH staff PERTH 05672104, 20 nymphs (00090494–00090513) (AM). Point Rd Campground. Leeuwin Naturaliste National Park, 34.09361°S 115.02416°E, 74 m, 03 Dec 1998, G. Cassis, *Cassytha racemosa* Nees (Lauraceae), det. WA Herbarium Staff PERTH 05227259, 7♂ (00090132–00090138), 27♀ (00090139–00090165), 1 nymph (00089986) (AM), 3♂ (00089976–00089978), 7♀ (00089979–00089985) (UNSW). Point Rd Campground. Leeuwin Naturaliste National Park, 34.09361°S 115.01638°E, 50 m, 02 Dec 1998, G. Cassis, *Pimelea sylvestris* R. Br. (Thymelaeaceae), det. WA Herbarium Staff PERTH 05227607, 1 nymph (00090131) (AM).

Wallabicoris pityrodiellus, new species
Figure 26; map 1; plate 3

DIAGNOSIS: Recognized by the presence of numerous small dark spots on the hemelytra but not on the pronotum (pl. 3); tibial spines without dark spots at bases; apical half of endosoma straight, erect, and elongate, secondary endosomal strap with a broad undulation proximally; left paramere greatly elongate, open over most of dorsal surface (fig. 26), greatly extending beyond margin of pygophore in repose. Most similar to *W. halganii* in the presence of spots on the hemelytra, but spots present on the pronotum in that species, and tibiae with distinct spots at the bases of spines.

DESCRIPTION: *Male*: Body moderately elongate, ovoid, total length 5.17–6.02, ratio l/w = 3.14. COLORATION (pl. 3): Pronotum unicolorous pale; hemelytron unicolorous pale with small brown spots; markings on cuneus present as individual small brown spots; membrane weakly fumose over entire areas, extreme base unicolorous with remainder, veins white; venter light green; antennal

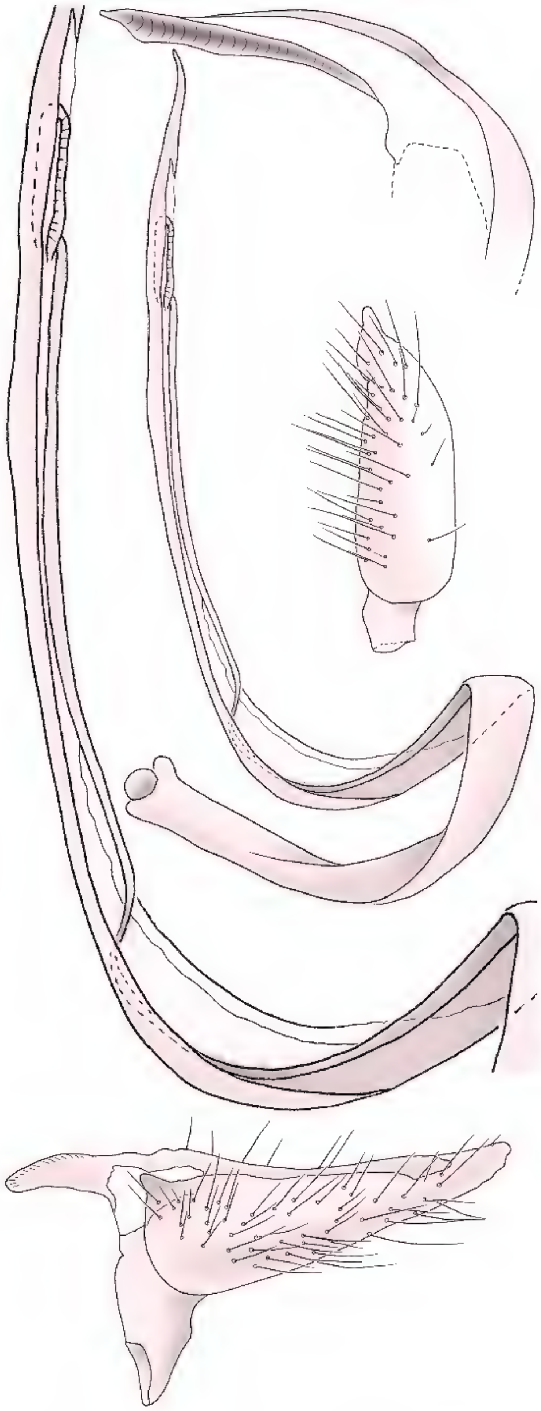


Fig. 26. *Wallabicoris pityrodiellus*, male genitalia (AMNH_PBI 00181870).

segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.21 antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.47; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 26): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.75; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex, apex elongate nipplelike; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.33; body tapered from base to apex; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus *Pityrodia* R. Br. (Lamiaceae).

HOSTS: Recorded only from *Pityrodia cuneata* (Gaudich.) Benth. (Lamiaceae).

DISTRIBUTION (map 1): Known only from the Shark Bay region of Western Australia.

DISCUSSION: *Pityrodia cuneata* is restricted to the Shark Bay region of Western Australia and, on the basis of present knowledge, so is *W. pityrodiellus*.

HOLOTYPE: **AUSTRALIA: Western Australia:** 24 km SE of jct of Manga Rd and Shark Bay Rd, Shark Bay World Heritage Area, 26.39014°S 114.0094°E, 60 m, 26 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Pityrodia cuneata* (Gaudich.) Benth. (Lamiaceae), det. PERTH staff PERTH6989950, 1♂ (AMNH_PBI 00090028) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 24 km SE of jct of Manga Rd and Shark Bay Rd, Shark Bay World Heritage Area, 26.39014°S 114.0094°E, 60 m, 26 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Pityrodia cuneata* (Gaudich.) Benth. (Lamiaceae), det. PERTH staff PERTH6989950, 13♂ (00181858–00181870), 14♀ (00090836–00090847, 00181885–00181886) (AMNH), 3♂ (00090029–00090031), 3♀ (00181882–00181884) (UNSW), 7♂ (00090032–00090038), 17♀ (00090848–00090858, 00181871–00181876) (WAMP). Useless Loop Rd ca. 20 km W of jct with Shark Bay Rd, 26.56331°S 113.9338°E, 30 m, 25 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Pityrodia cuneata* (Gaudich.) Benth. (Lamiaceae), det. Field ID, 4♀ (00369033–00369036) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 8 km N of Nerren Nerren High School, 27.0567°S 114.63°E, 25 Sep 1985, R.P. McMillan, *Prostanthera* sp. (Labiatae), 1♂ (00202571) (AMNH), 2♂ (00202572, 00202573), 1♀ (00202574) (WAMP). 24 km SE of jct of Manga Rd and Shark Bay Rd, Shark Bay World Heritage Area, 26.39014°S 114.0094°E, 60 m, 26 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Pityrodia cuneata* (Gaudich.) Benth. (Lamiaceae), det. PERTH staff PERTH6989950, 2♂ (00090026–00090027), 5♀ (00181877–00181881) (AM), 1♀ (00302770) (AMNH).

Wallabicoris pityrodii, new species
Figures 27, 28; map 1; plate 4

DIAGNOSIS: Structure of left paramere unique among *Wallabicoris* spp., the body of paramere greatly elongate, flattened, tonguelike, and with the anterior process placed about midway along the margin of the paramere (fig. 28); paramere projecting well beyond margin of pygophore; secondary endosomal strap without undulation or twisting; phallotheca with a dorsal crest. Body moderately large and broad, mean total length 5.28, mean ratio total length/pronotal width 3.17. Head distinctly projecting beyond anterior margin of eyes, mean ratio head length/head width 2.52. General coloration pale, dirty yellow (pl. 4); vestiture of dorsum mostly pale, reclining. Similar in size and breadth of body to *W. dicrastyli*, but coloration in that species more nearly white, left paramere with anterior process arising in line with paramere shaft, and secondary endosomal strap with a very broad subbasal undulation. Breeds on *Pityrodia* and *Cyanostegia* spp. (Lamiaceae).

DESCRIPTION: *Male*: Body very elongate ovoid, total length 5.13–5.46, ratio l/w = 3.17. COLORATION (pl. 4): Pronotum unicolorous pale; hemelytron mostly pale; markings on cuneus present as partial infuscation; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly fumose over entire area, veins white; venter light green; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.47 (fig. 27A); antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.45; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium reaching to margin of pygophore. GENITALIA (fig. 27, D–F, 28): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.67; apex of primary endosomal strap nearly straight; secondary endosomal strap, very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, smoothly curving over

Fig. 27. *Wallabicoris pityrodii*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Mesothoracic spiracle and metathoracic scent-efferent system. **C.** Pretarsus in frontal view. **D.** Abdomen in lateral view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00136933).

entire length; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering

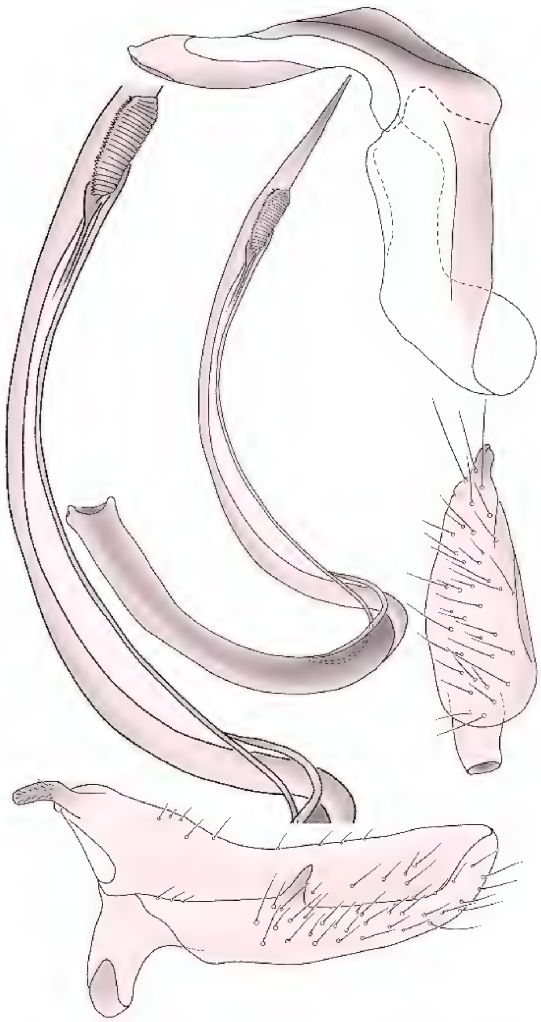


Fig. 28. *Wallabicoris pityrodii*, male genitalia (AMNH_PBI 00129643).

toward apex; anterior process arising near middle or anterodorsal margin; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.25; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus *Pityrodia* R. Br. (Lamiaceae).

HOSTS: Recorded from *Pityrodia terminalis* (Endl.) A.S. George (pls. 9D, 10A, B) and *Cyanostegia angustifolia* Turcz. (Lamiaceae) (pl. 10C, D). The single record from *Newcastelia insignis* E. Pritz. may be the result of commingling specimens in the field.

DISTRIBUTION (map 1): Know from the Goldfields region of Western Australia.

DISCUSSION: *Pityrodia terminalis* and *Cyanostegia angustifolia* are nearly sympatric in their distribution across the wheat belt of southwestern Western Australia. Thus, further collecting might show that *W. pityrodii* roughly conforms to the distribution of its hosts.

HOLOTYPE: **AUSTRALIA: Western Australia:** Just E of Lake King, 33.08747°S 119.6931°E, 350 m, 22 Nov 1999, R.T. Schuh and G. Cassis, *Pityrodia terminalis* (Endl.) A.S. George (Chloanthaceae), det. PERTH staff PERTH 05670373, 1♂ (AMNH_PBI 00129641) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 2.1 km S of Coorow-Greenhead Rd, on Cockleshell Gully Rd, 30.08751°S 115.12°E, 156 m, 06 Nov 2004, Cassis, Weirauch, Tatarnic, Symonds, *Pityrodia bartlingii* (Lehm.) Benth. (Lamiaceae), det. PERTH staff PERTH6987494, 3♂ (00369062–00369064), 8♀ (00369065–00369072) (AMNH). 123 km W of Coolgardie on Great Eastern Hiway, 31.23414°S 120.1562°E, 17 Nov 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Cyanostegia angustifolia* Turcz. (Chloanthaceae), det. PERTH staff PERTH 05670640, 1♂ (00136948), 2♀ (00136968, 00136974) (AMNH). Lake King, 33.08715°S 119.2456°E, 350 m, 05 Nov 1996, Schuh and Cassis, *Pityrodia terminalis* (Endl.) A.S. George (Chloanthaceae), det. PERTH staff PERTH 05236886, 13♂ (00087119, 00089558–00089566, 00089568–00089570), 13♀ (00087430, 00089567, 00089571–00089581) (AM), 39♂ (00134904–00134916–00134918–00134938–00134942), 15♀ (00132090–00132098, 00134963, 00134965, 00134969, 00134993–00134994, 00135044) (AMNH), 6♀ (00089608–00089613) (UNSW), 10♂ (00089548–00089557), 71♀ (00089582–00089603, 00134995–00135043) (WAMP). Southern Cross, 31.21666°S 119.33333°E, 08 Oct 1983, R.P. McMillan, 1♂ (00202568 [cat 94/240]),

2♀ (00202569 [cat 94/239], 00202570 [cat 94/241]) (WAMP). just E of Lake King, 33.08747°S 119.6931°E, 350 m, 22 Nov 1999, R.T. Schuh and G. Cassis, 11♂ (00089189–00089193, 00090270–00090275) (AM), 1♂ (00129638), 30♀ (00129646–00129662–00129670–00129675) (AMNH), 6♂ (00090276–00090281) (UNSW).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 2.1 km S of Coorow-Greenhead Rd, on Cockleshell Gully Rd, 30.08751°S 115.12°E, 156 m, 06 Nov 2004, Cassis, Weirauch, Tatarnic, Symonds, *Pityrodia bartlingii* (Lehm.) Benth. (Lamiaceae), det. PERTH staff PERTH6987494, 7 nymphs (00369073–00369079) (AMNH). 13.5 km W of Nungarin on Rt 50, 31.11547°S 117.945°E, 300 m, 16 Nov 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Pityrodia terminalis* (Endl.) A.S. George (Chloanthaceae), det. PERTH staff PERTH 05670160, 1♂ (00089614), 4♀ (00089615–00089618) (AM). 28 km S of Menzies, 29.92835°S 121.1231°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Newcastelia insignis* E. Pritz. (Chloanthaceae), det. PERTH staff, 1♂ (00133144) (AMNH). 123 km W of Coolgardie on Great Eastern Hiway, 31.23414°S 120.1562°E, 17 Nov 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Cyanostegia angustifolia* Turcz. (Chloanthaceae), det. PERTH staff PERTH 05670640, 18♂ (00136932–00136947, 00136949–00136950), 22♀ (00136951–00136967, 00136969–00136973) (AMNH). Lake King, 33.08715°S 119.2456°E, 350 m, 05 Nov 1996, Schuh and Cassis, *Pityrodia terminalis* (Endl.) A.S. George (Chloanthaceae), det. PERTH staff PERTH 05236886, 12♂ (00089267–00089278), 18♀ (00087120, 00089279–00089291, 00089604–00089607) (AM), 9♂ (00101992–00101995, 00134945–00134949), 38♀ (00132099–00132107, 00134953–00134962, 00134964, 00134966–00134968, 00134970–00134984), 3 nymphs (00134950–00134952) (AMNH), 3♂ (00132087–00132089), 2♀ (00134985, 00134986) (ANIC), 2♀ (00134991, 00134992) (CNC), 2♂ (00134943, 00134944), 2♀ (00134989, 00134990) (USNM), 2♀ (00134987, 00134988) (ZISP). just E of Lake King, 33.08747°S 119.6931°E, 350 m, 22 Nov 1999, R.T. Schuh and G. Cassis, 48♀ (00089194–00089209, 00090238–00090269) (AM), 4♂ (00129637, 00129642–00129643, 00129810), 4♀ (00129811–00129814) (AMNH), 2♂ (00129639, 00129640) (CNC), 2♂ (00129644, 00129645) (ZISP).

Wallabicoris pomaderri, new species
Figure 29; map 2; plate 4

DIAGNOSIS: Coloration of dorsum a mixture of transparent, golden brown, and faint green (pl. 4). Size and coloration similar to *W. pimelei*, but that species with heavy, erect, black setae on head and pronotum, whereas *W. pomaderri* with mostly pale reclining setae. Form of endosoma shared with *W. rhamnicola* and *W. spyridii*, species with numerous red spots on the dorsum, the secondary endosomal strap incomplete, with a large gap between proximal end of secondary gonopore and remainder of strap (fig. 29), but *W. pomaderri* without red spots on the dorsum and with an apically acuminate left paramere as opposed to the blunt form seen in the other two species; secondary endosomal strap complete in *W. pimelei*. Secondary endosomal strap also incomplete in *W. rutidosi*, but in that species the strap broken medially and with a relatively long section attached to the secondary gonopore. Breeds on *Pomaderris* sp. (Rhamnaceae).

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 3.86–4.03, ratio l/w = 2.96. COLORATION (pl. 4): Pronotum dirty yellow with a pale, median, longitudinal strip; hemelytron mostly dirty

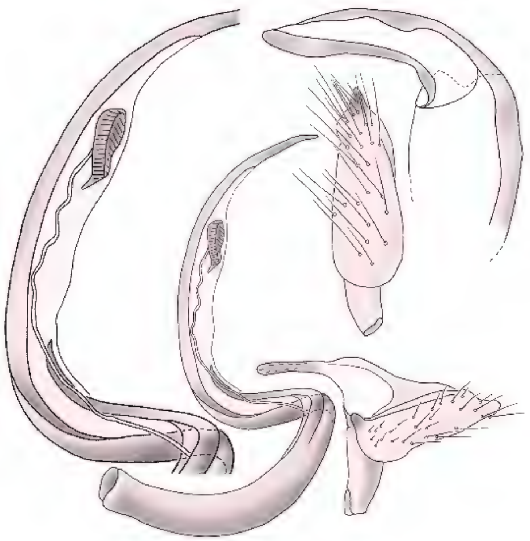


Fig. 29. *Wallabicoris pomaderri*, male genitalia (AMNH_PBI 00172724).

yellow, corium and clavus with dirty areas; markings on cuneus present as partial infuscation on posterior half; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, veins white; venter light green; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Barely projecting, ratio wh/lh = 5.17; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.43; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 29): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.33; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching midway to gonopore from major bend in endosoma; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.50; body more or less parallel sided; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Pomaderris* Labill. (Rhamnaceae).

HOSTS: Recorded only from *Pomaderris oraria* subsp. *calcicola* N.G. Walsh (Rhamnaceae).

DISTRIBUTION (map 2): Known from a single collecting event in southwestern Victoria.

DISCUSSION: *Pomaderris oraria* ranges along the south coast from Adelaide to west of Melbourne and also occurs on the north coast of Tasmania. We might therefore expect to find range extensions for *W. pomaderri* within this area.

HOLOTYPE: **AUSTRALIA: Victoria:** Lower Glenelg National Park, 38.0476°S 141.1596°E, 20 m, 07 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Pomaderris oraria* subsp. *calcicola* N.G. Walsh (Rhamnaceae), det. NSW staff NSW658131, 1♂ (AMNH_PBI 00172727) (MVMA).

PARATYPES: **AUSTRALIA: Victoria:** Lower Glenelg National Park, 38.0476°S 141.1596°E, 20 m, 07 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Pomaderris oraria subsp. calcicola* N.G. Walsh (Rhamnaceae), det. NSW staff NSW658131, 2♂ (00172725–00172726), 8♀ (00172728–00172733, 00172743–00172744) (AM), 2♂ (00172723–00172724), 5♀ (00172735–00172737, 00172741, 00172746) (AMNH) 2♀ (00172745, 00172747) (MVMA), 1♂ (00172748), 5♀ (00172734, 00172738–00172740, 00172742) (UNSW).

Wallabicoris prostantheri, new species
Figure 30; map 1; plate 4

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 4), the moderate size, with a mean total length of 4.70, and the structure of the male genitalia, the apical portion of the endosoma strongly curving, of moderate length proximad of the secondary gonopore and greatly elongate and strongly curving apicad of the secondary gonopore, the secondary strap of the endosoma complete and short submedial twist, and the left paramere weakly elongate, with a distinct shoulder on the posterior process, closed over most of the dorsal surface (fig. 30), and somewhat exceeding the margin of the pygophore in repose. Head only moderately projecting beyond anterior margin of eyes, mean ratio width head/length head 3.75,

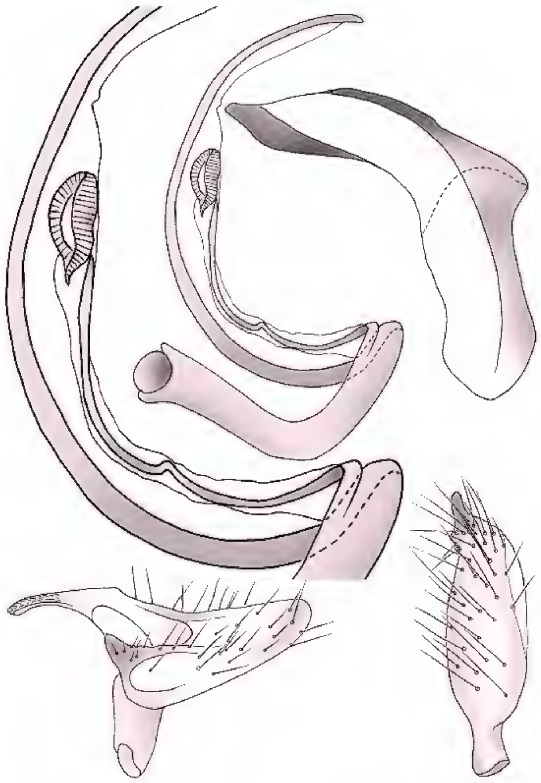


Fig. 30. *Wallabicoris prostantheri*, male genitalia (AMNH_PBI 00090055).

interocular distance small, just less than one-third width of head (mean 0.31). Breeds on *Prostanthera* spp. (Lamiaceae). Size larger than all similarly colored Lamiaceae-feeding species, except *W. dicrastyli*; slightly smaller than the Thymelaeaceae-feeding *W. pinocchii*. Smaller than all the chalk-white Asteraceae-feeding species. Potentially confused with *W. rutidosi*, but that species with a broken secondary endosomal strap and a short apex of the endosoma distad of the secondary gonopore.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 4.19–5.31, ratio l/w = 3.44. COLORATION (pl. 4): Pronotum unicolorous pale; hemelytron unicolorous pale; markings on cuneus absent; membrane unicolorous pale, extreme base unicolorous with remainder, veins white; venter light green; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with black setae intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.72; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.49; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 30): **Endosoma:** Base moderately long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap greatly elongate apically, ratio lae/lsg 2.83; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a short submedial undulation; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.00; body more or less parallel sided; posterior margin with a distinct protuberance subapically; body more or less confluent with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus, *Prostanthera* Labill. (Lamiaceae).

HOSTS: Recorded only from *Prostanthera campbellii* F. Muell. (Lamiaceae) (pl. 9C).

DISTRIBUTION (map 1): Know from a single collecting event in the Goldfields region of Western Australia.

DISCUSSION: *Prostanthera campbellii* is distributed from the Goldfields of Western

Australia north to the Pilbara. Thus, we might expect a corresponding distribution for *W. prostantheri*, on the assumption that it is host specific.

HOLOTYPE: **AUSTRALIA: Western Australia:** 28 km S of Menzies (3.5 km E of Hiway), 29.91917°S 121.1514°E, 500 m, 25 Oct 1996, Schuh and Cassis, *Prostanthera campbellii* F. Muell. (Lamiaceae) PERTH 05099714, 1♂ (AMNH_PBI 00090056) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 28 km S of Menzies (3.5 km E of Hiway), 29.91917°S 121.1514°E, 500 m, 25 Oct 1996, Schuh and Cassis, *Prostanthera campbellii* F. Muell. (Lamiaceae) PERTH 05099714, 2♂ (00090057, 00090058), 3♀ (00090063, 00090070–00090071) (AM), 3♂ (00090055, 00090061–00090062), 2♀ (00090067, 00090068) (AMNH), 2♀ (00090069, 00090072) (UNSW), 2♂ (00090059, 00090060), 3♀ (00090064–00090066) (WAMP). Ca 35 km S of Menzies, 29.96214°S 121.1323°E, 600 m, 24 Oct 1996, Schuh and Cassis, *Prostanthera campbellii* F. Muell. (Lamiaceae), det. PERTH staff PERTH 05099714, 1♂ (00087259), 1♀ (00087260) (AM).

Wallabicoris pultenaei, new species
Figures 31–33; map 2; plate 4

DIAGNOSIS: Recognized by the relatively small size, generally greenish coloration of the dorsum with a strongly contrasting red clavus and endocorium (pl. 4), small eyes, broad vertex, very weakly elevated pronotum, and weakly but distinctly convex costal margin of the hemelytron. Labium reaching from middle of abdomen to midpoint of pygophore; left paramere elongate, broad, and projecting well beyond margin of pygophore; secondary strap of endosoma bifurcate submedially (fig. 32), similar to condition in *W. cuneotinctus*, *W. spyridiellus*, *W. thomasii*, and *W. trymalii*.

DESCRIPTION: *Male*: Body elongate ovoid, total length 3.26–3.55, ratio l/w = 3.03. COLORATION (pl. 4): Pronotum mostly faded green with a medial longitudinal pale stripe; clavus and posterior half of endocorium red, remainder of corium pale to weakly green; cuneus solid orange on posterior half; membrane with elongate, contrasting, fumose marking at extreme base, remainder heavily fumose over most of area, veins red; venter light green; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.77 (fig. 31A); antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space small, ratio iod/wh = 0.52; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium reaching to margin of pygophore. GENITALIA (figs. 31E, F, 32): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap short apically, ratio lae/lsg 1.50; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, bifurcating at about midpoint; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.91; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex tapered.

Female: GENITALIA: Figure 33.

ETYMOLOGY: Named for its host genus, *Pultenaea* Sm. (Fabaceae).

HOSTS: Recorded only from *Pultenaea tenuifolia* R. Bruce ex Sims (Fabaceae) (pl. 8A).

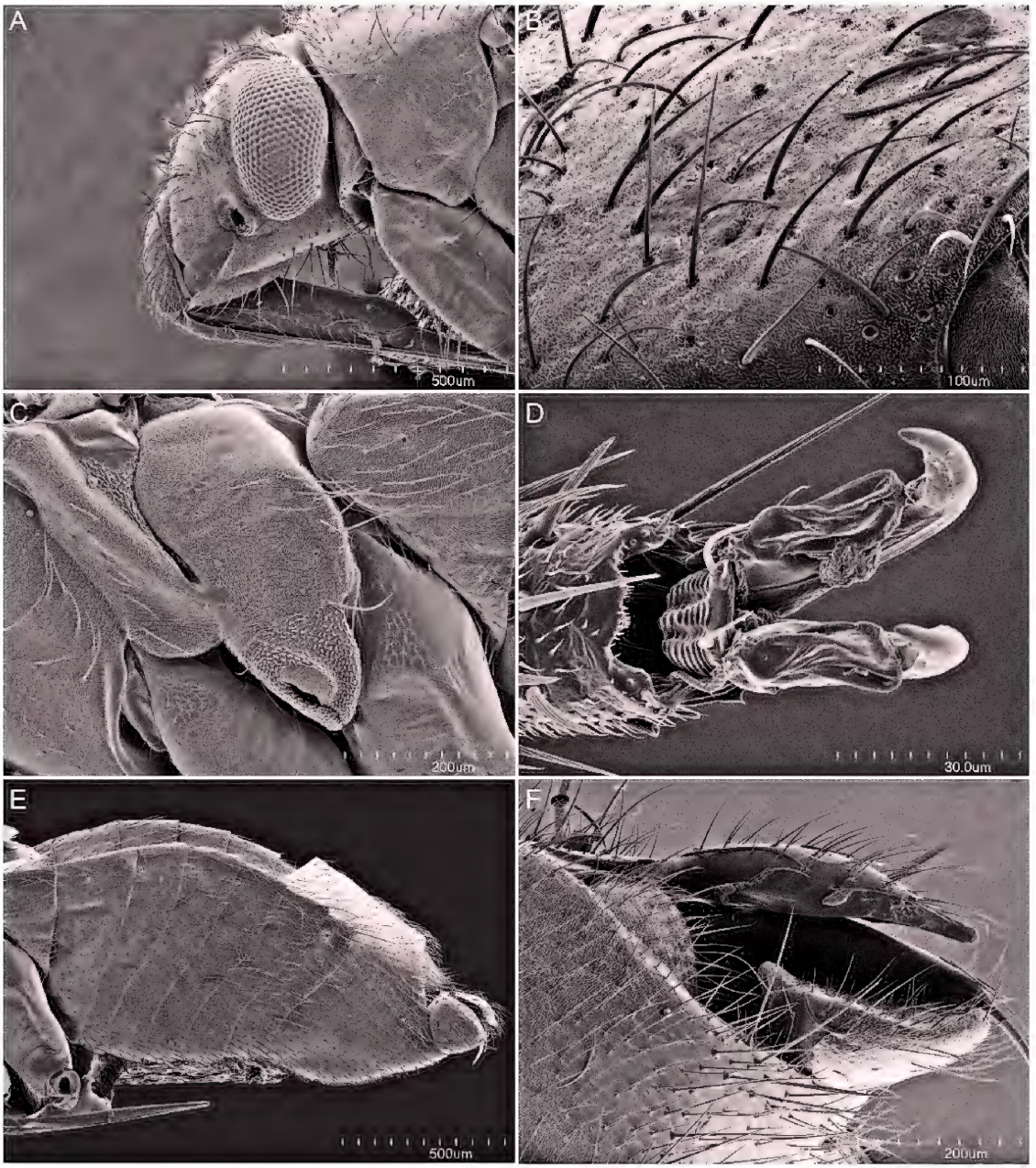


Fig. 31. *Wallabicoris pultenaei*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on pronotum. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in ventral view. **E.** Abdomen in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00089410).

DISTRIBUTION (map 2): Known from two collecting events in Little Desert National Park, western Victoria.

DISCUSSION: *Pultenaea tenuifolia* is distributed broadly across the south coast of Australia, including the north coast of Tasmania, but with most records from southwestern Victoria, adjacent South Australia, and the Eyre Peninsula. We surmise that the limited known distribution for *W.*

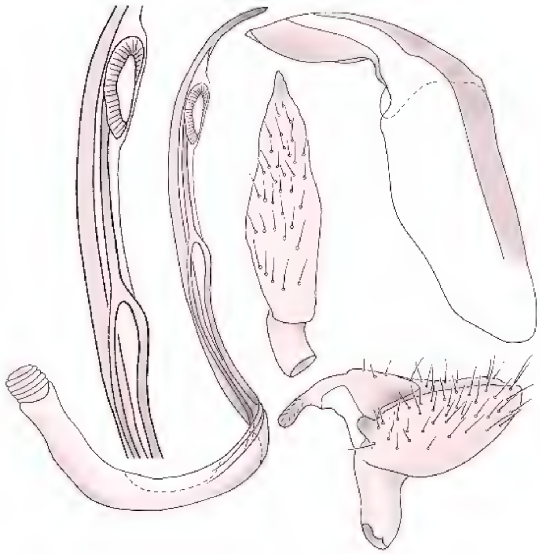


Fig. 32. *Wallabicoris pultenaei*, male genitalia (AMNH_PBI 00089343).

pultenaei is indicative of the need for additional field effort.

HOLOTYPE: **AUSTRALIA: Victoria:** Little Desert National Park, 14 km E on McDonald Hiway, 36.56668°S 141.4°E, 150 m, 04 Nov 1995, Schuh and Cassis, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395987, 1♂ (AMNH_PBI 00089341) (MVMA).

PARATYPES: **AUSTRALIA: South Australia:** Scorpion Springs Cons. Park, 35.62648°S 140.8698°E, 100 m, 10 Nov 1998, Schuh, Cassis, Silveira, *Spyridium* sp. (Rhamnaceae), det. Royal Bot Gard. NSW NSW427521, 1♂ (00130396) (AMNH). **Victoria:** 13 km S of Kaniva, 36.50001°S 141.2167°E, 150 m, 03 Nov 1995, Schuh and Cassis, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395981, 13♂ (00132724–00132736), 14♀ (00132742–00132755) (AMNH). Little Desert National Park, 14 km E on McDonald Hiway, 36.56668°S 141.4°E, 150 m, 04 Nov 1995, Schuh and Cassis, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395987, 95♂ (00087281, 00087486, 00089326–00089332, 00089338–00089340, 00089342–00089345, 00089357–00089360, 00089362, 00089364–00089366, 00089368–00089369, 00089371–00089375, 00089395–00089397, 00089402–00089423, 00089425, 00089460–00089481, 00089502–00089516, 00181908), 63♀ (00089347–00089353, 00089356, 00089376–00089386, 00089388–00089393, 00089428–00089447, 00089484–00089501) (AM), 58♂ (00089361, 00089363, 00089367, 00089370, 00131851–00131865, 00132229–00132241, 00132677–

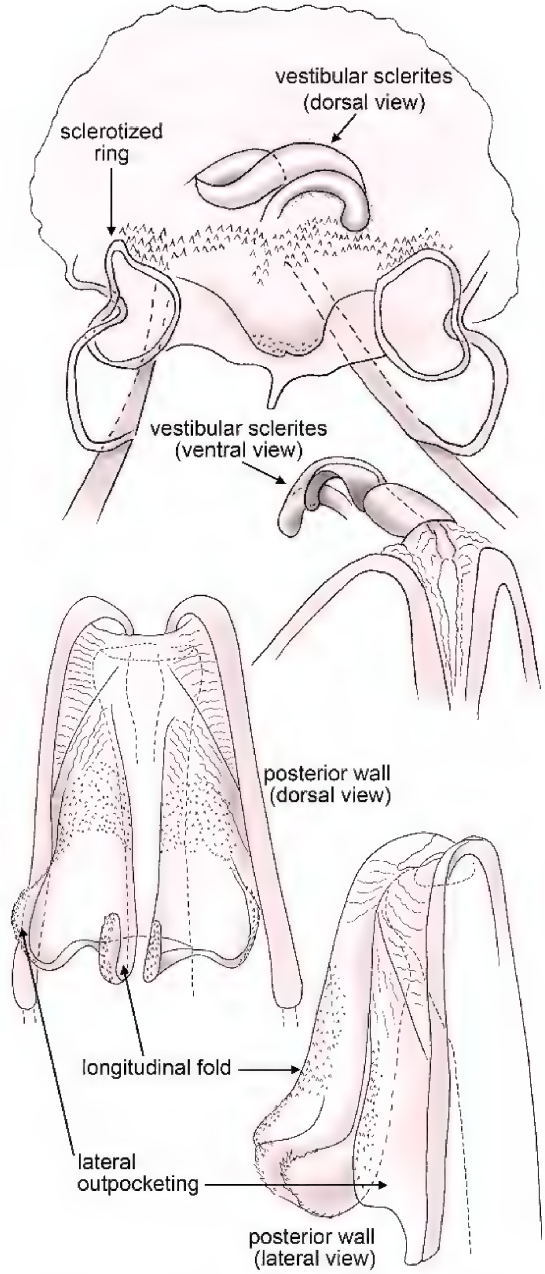


Fig. 33. *Wallabicoris pultenaei*, female genitalia (AMNH_PBI 00132258).

00132702), 46♀ (00089325, 00089354, 00089387, 00089483, 00131880–00131894, 00132242–00132257–00132258, 00132704–00132713) (AMNH), 4♂ (00089314–00089317), 5♀ (00089320–00089324) (ANIC), 3♂ (00131872–00131874) (CNC), 7♂ (00089311–00089313, 00089398–00089401), 6♀ (00087282, 00089448–00089452) (MVMA), 8♂ (00089298–00089304, 00089337), 8♀ (00089307–00089310, 00089333–00089336) (UNSW), 3♂ (00131866–00131868), 3♀ (00131877–00131879) (USNM), 3♂ (00131869–00131871), 2♀ (00131875, 00131876) (ZISP). Little Desert National Park, McDonald Highway, 36.58255°S 141.6418°E, 190 m, 05 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. NSW staff NSW658113, 2♀ (00181887, 00181888) (CNC).

Other Specimens Examined: **AUSTRALIA: Victoria:** 13 km S of Kaniva, 36.50001°S 141.2167°E, 150 m, 03 Nov 1995, Schuh and Cassis, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395981, 5 nymphs (00132737–00132741) (AMNH). Little Desert National Park, 14 km E on McDonald Hiway, 36.56668°S 141.4°E, 150 m, 04 Nov 1995, Schuh and Cassis, *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395987, 11 nymphs (00089305, 00089453–00089459, 00089517–00089519) (AM), *Pultenaea tenuifolia* R. Br. ex Sims (Fabaceae), det. P.H. Weston 1996 NSW 395987, 1 nymph (00132703) (AMNH).

Wallabicoris rhamnicola, new species
Figure 34; map 2; plate 4

Diagnosis: Among those species with numerous red spots on the dorsum (pl. 4), most similar to *W. spyridii*, the left paramere being short, deep bodied, and blunt apically, secondary endosomal strap incomplete, with a large gap between proximal end of secondary gonopore and remainder of strap (fig. 34); the broken strap also seen in a similar form in the Rhamnaceae feeder *W. pomaderri*, but that species without red spots on the dorsum and with an apically acuminate left paramere, and in *W. rutidosi*, but in that species the strap broken medially and with a relatively long section attached to the secondary gonopore.

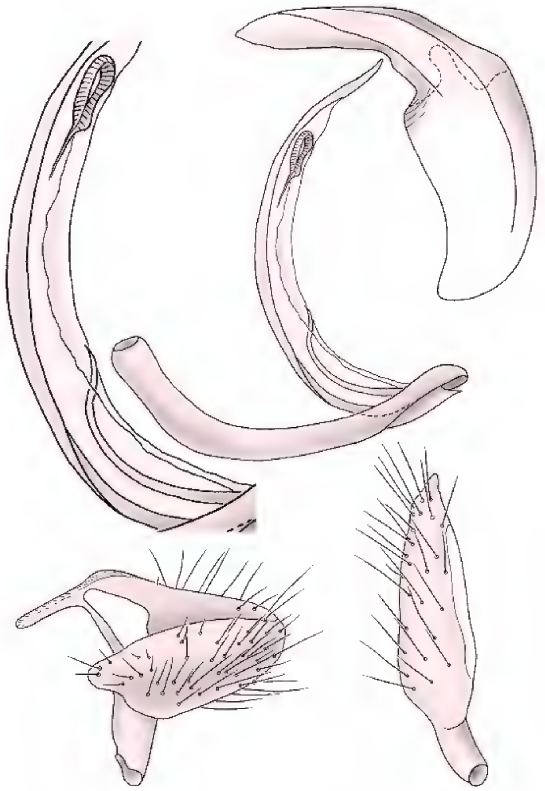


Fig. 34. *Wallabicoris rhamnicola*, male genitalia (AMNH_PBI 00172689).

Description: *Male*: Body weakly elongate, weakly ovoid, total length 3.79–4.14, ratio l/w = 2.97. COLORATION (pl. 4): Pronotum heavily covered with carmine botches, pale along midline and sometimes more broadly; scutellum mostly pale with some red or carmine spots or blotches; hemelytron with a few red or carmine spots on anterior half of corium; broad, solid red fascia present on corium just anterior to cuneal fracture; red markings on clavus solid over most of area with apex pale; cuneus pale on basal half, solid orange or red over most of remaining area; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly to strongly fumose over entire area, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown

spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with erect or suberect black setae, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.45; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space moderate, ratio iod/wh = 0.44; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 34): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.96; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching midway to gonopore from major bend in endosoma; secondary gonopore seen frontally in lateral view of endosoma; fingerlike protuberance at distal margin of secondary gonopore absent. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process directed posteriorly; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.33; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for its occurrence on species of Rhamnaceae.

HOSTS: Recorded only from *Spyridium vexilliferum* (Hook.) Reissek (Rhamnaceae).

DISTRIBUTION (map 2): Known from a single collecting event in southwestern Victoria.

DISCUSSION: The distribution of *Spyridium vexilliferum* ranges from southwestern Victoria to the Eyre Peninsula as well as most of Tasmania. We surmise that the single locality for *W. pultenaei* is indicative of the need for additional field effort.

HOLOTYPE: **AUSTRALIA: Victoria:** Discovery Bay National Park, Swan Lake Beach area, 38.21766°S 141.3098°E, 33 m, 08 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Spyridium vexilliferum* (Hook.) Reissek (Rhamnaceae), det. NSW staff NSW658136, 1♂ (AMNH_PBI 00172696) (MVMA).

PARATYPES: **AUSTRALIA: Victoria:** Discovery Bay National Park, Swan Lake Beach area, 38.21766°S 141.3098°E, 33 m, 08 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Spyridium vexilliferum* (Hook.) Reissek (Rhamnaceae), det. NSW staff NSW658136, 7♂ (00172702–00172705, 00172707–00172709) (AM), 15♂ (00172688–00172695, 00172697–00172701, 00172706, 00172713), 25♀ (00172655–00172676, 00172680, 00172684, 00172687) (AMNH), 2♂ (00172720, 00172721), 2♀ (00172685, 00172686) (MVMA), 9♂ (00172710–00172712, 00172714–00172719), 6♀ (00172677–00172679, 00172681–00172683) (UNSW).

Wallabicoris rutidosi, new species
Figures 35, 36; map 3; plate 4

DIAGNOSIS: The only *Wallabicoris* sp. with a medial break in the secondary endosomal strap (fig. 35); some Rhamnaceae/Sterculiaceae feeders have a discontinuous secondary strap, but in those species the strap is absent from the proximal end of the secondary gonopore. Recognized among those species with heavily yellow coloration by the nonuniform yellow dorsum having a checkerboard pattern (pl. 4), by the moderate size, mean total length 4.87, the head weakly projecting beyond the anterior margin of the eyes, ratio head length/head width 3.19, the left paramere relatively short and deep bodied and only moderately projecting beyond margin of pygophore (fig. 36), and the secondary endosomal strap discontinuous, with a short medial break (fig. 36). Breeds on *Rutidosis helichrysoides* (Asteraceae). Similar to *W. chrysocephali* and *W. maralinga* in the relatively short, deep-bodied left paramere only moderately projecting beyond the margin of the pygophore, but coloration of dorsum in *W. rutidosi* not so uniformly yellow in many specimens. Distinguished

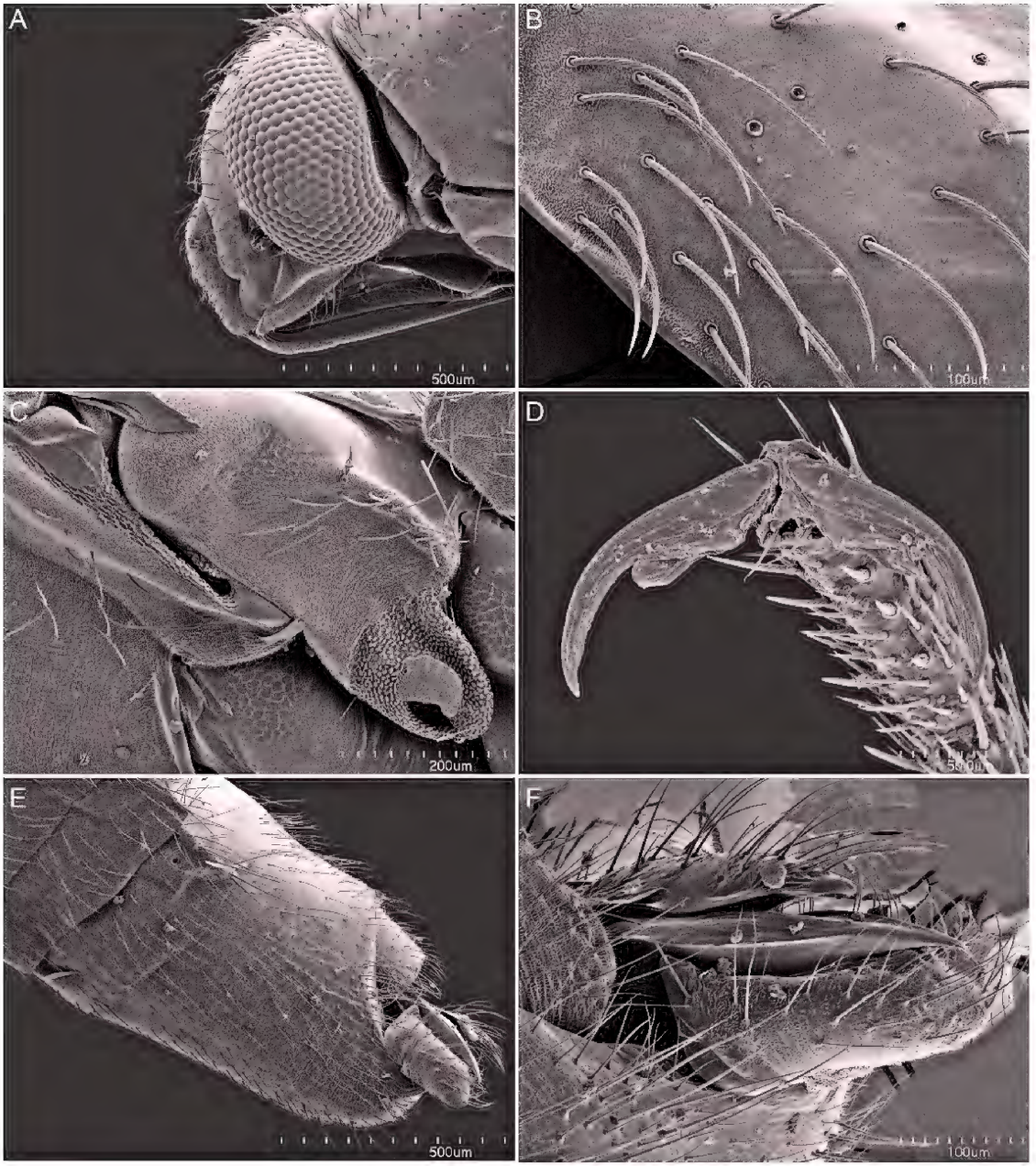


Fig. 35. *Wallabicoris rutidosi*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on clavus. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in frontal view. **E.** Abdomen in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00130210).

from *W. sandstonensis* and *W. waitzii* by the much more elongate left paramere in those species projecting well beyond the margin of the pygophore, and the longer, more slender body, and uniform, more intensely yellow coloration in *W. waitzii*. Potentially confused with *W. commoni*, but that species substantially larger, mean total length 5.60, and with an unbroken secondary endosomal strap with a very broad subbasal undulation.

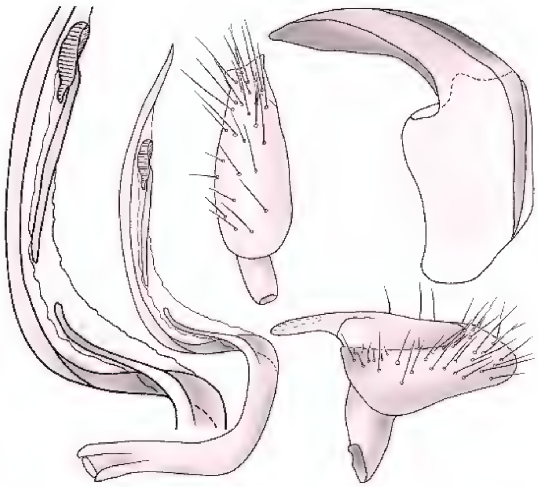


Fig. 36. *Wallabicoris rutidosi*, male genitalia (AMNH_PBI 00089627).

DESCRIPTION: *Male*: Body moderately elongate, parallel sided, total length 4.67–5.11, l/w = 3.36. COLORATION (pl. 4): Pronotum unicolorous faded yellow; hemelytron mostly pale or faded yellow with some dirty areas; markings on cuneus present as partial infuscation; membrane with extreme base with an elongate fumose marking, remainder partially fumose, especially within cells, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, dirty yellow with pale medial seta; antennal segment 2 dirty yellow; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.18 (fig. 35A); antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.39; eyes occupying entire height of head in lateral view (hg0–1/he20); labium reaching to midpoint of abdomen. GENITALIA (fig. 35E, F, 36): **Endosoma:** Base moderately long with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 1.95; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, broken at about midpoint; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 2.65; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Rutidosis* DC (Asteraceae: Gnaphalieae).

HOSTS: Recorded on multiple collecting events from *Rutidosis helichrysoides* DC. (Asteraceae) (pl. 7B, C). The records from *Amyema* and *Eremophila* are either sitting records or the result of commingling specimens in the field.

DISTRIBUTION (map 3): Widely distributed from central Australia (Northern Territory, South Australia) west into Queensland and New South Wales.

DISCUSSION: *Rutidosis helichrysoides* is very broadly distributed across the arid interior of Australia. Known records for *W. rutidosi* are from the Eyre Basin, although the actual distribution will require further sampling, to determine whether it is host specific and whether its distribution is coterminous with that of its host.

HOLOTYPE: **AUSTRALIA: Northern Territory:** ~44 km E of Stuart Hiway on Ernest Giles Rd, 24.56668°S 132.6815°E, 494 m, 30 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. NSW staff NSW666245, 1♂ (AMNH_PBI 00098432) (NTM).

PARATYPES: **AUSTRALIA: Northern Territory:** 21 km E of Stuart Hiway on Ernest Giles Rd, 24.56668°S 132.8539°E, 471 m, 29

Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. NSW staff NSW658415, 4♂ (00098305–00098308), 16♀ (00098309–00098311–00098324) (AMNH). 25.3 km NW of Bond Springs on Tanami Rd, 23.51668°S 133.6212°E, 746 m, 21 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. NSW staff NSW658290, 9♂ (00097213–00097219, 00181906, 00097308), 21♀ (00097287–00097307) (AM), 14♂ (00097220–00097224–00097232, 00097236), 39♀ (00097248–00097286) (AMNH), 3♂ (00097233–00097235), 6♀ (00097242–00097247) (UNSW), 1♂ (00097237) (ZISP). 74.2 km NW of Bond Springs on Tanami Rd, 23.41668°S 133.2307°E, 671 m, 22 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. field ID NSW 658290, 8♂ (00097414–00097421), 19♀ (00097331–00097340, 00097342–00097350) (AM), 14♂ (00097397, 00097401–00097413), 42♀ (00097309–00097322, 00097341, 00097351–00097376, 00097392) (AMNH), 1♂ (00097398), 7♀ (00097381–00097387) (ANIC), 1♂ (00097399) (CNC), *Rutidosis helichrysoides* DC. (Asteraceae), det. field ID NSW 658290, 4♂ (00097393–00097396), 8♀ (00097323–00097330) (UNSW), 1♂ (00097400), 4♀ (00097377–00097380) (USNM), 4♀ (00097388–00097391) (ZISP). Trephina Gorge National Park, John Hayes Rockpool Campground, 23.53334°S 134.3542°E, 580 m, 25 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, 1♂ (00098274), 1♀ (00098275) (AM). West MacDonnell National Park, Road to Ormiston Gorge, 23.65001°S 132.7242°E, 664 m, 05 Nov 2001, Schuh and Schwartz, *Amyema preissii* (Miq.) Tiegh. (Loranthaceae), det. NSW staff NSW666335, 2♂ (00098043, 00098044) (AM). ~44 km E of Stuart Hiway on Ernest Giles Rd, 24.56668°S 132.6815°E, 494 m, 30 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. NSW staff NSW666245, 3♂ (00098430–00098431, 00098433), 5♀ (00098434–00098438) (AM).

Other Specimens Examined: **AUSTRALIA: Northern Territory:** 25.3 km NW of Bond Springs on Tanami Rd, 23.51668°S 133.6212°E, 746 m, 21 Oct 2001, Cassis, Schuh, Schwartz, Silveira, Wall, *Rutidosis helichrysoides* DC. (Asteraceae), det. NSW staff NSW658290, 4 nymphs (00097238–00097241) (AMNH). 39 km E of Alice Springs, 23.68333°S 134.25°E, 26 Sep 1978, M.S. Upton, 5♂ (00168775–00168779) (ANIC). 53 km E by N of Alice Springs, 23.355°S 134.22°E, 06 Oct 1978, Upton & Barrett, 2♂ (00168771, 00168772) (ANIC). **Queensland:** 73.7 km E of Betoota, 25.60813°S 141.3999°E, 180 m, 03 Nov 1998, Schuh, Cassis, Silveira, 6♀ (00194522–00194527) (AMNH). **South Australia:** 1 km N of Innamincka, Cooper Creek, 27.73124°S 140.7364°E, 120 m, 05 Nov 1998, Schuh, Cassis, Silveira, *Rutidosis helichrysoides* DC. (Asteraceae), det. Det: Royal Bot Gard. NSW NSW427519, 5♂ (00087121, 00087431, 00089627, 00089660–00089661), 63♀ (00087122, 00089629, 00089631–00089652, 00089665–00089693, 00089701–00089710), 11 nymphs (00089653–00089658, 00089711–00089715) (AM), 10♂ (00089628, 00089659, 00089662, 00089664, 00130223–00130225, 00136606–00136608), 56♀ (00130226–00130274, 00136610–00136616), 1 nymph (00136609) (AMNH), 1♂ (00089663), 7♀ (00089694–00089700) (UNSW). 45km NE of Welbourn Hill, 27.05°S 134.36666°E, 20 Sep 1978, Upton & Barrett, 2♂ (00168808, 00168809) (ANIC). Cadelga Homestead, 26.08949°S 140.4106°E, 150 m, 04 Nov 1998, Schuh, Cassis, Silveira, 2♂ (00130210, 00130211) (AMNH).

Wallabicoris sandstonensis, new species
Figure 37; map 4; plate 5

Diagnosis: Recognized among those species with heavily yellow coloration by the faded yellow dorsum (pl. 5), by the relatively small size, mean total length 4.50, the head conspicuously projecting beyond the anterior margin of the eyes, ratio head length/head width 2.58, the left paramere greatly elongate and strongly projecting beyond margin of pygophore (fig. 37), and the secondary endosomal strap with a very broad and deep submedial undulation (fig. 37). Host unknown. Similar to *W. waitzii* in the elongate left paramere strongly projecting beyond the margin of the pygophore, but coloration of dorsum in *W. waitzii* more uniformly and intensely yellow and the body much more strongly elongate than in *W. sandstonensis*. Distinguished from *W. chrysocephali*, *W. maralinga*, *and W. rutidosi* by the much shorter, more deep-bodied left paramere in

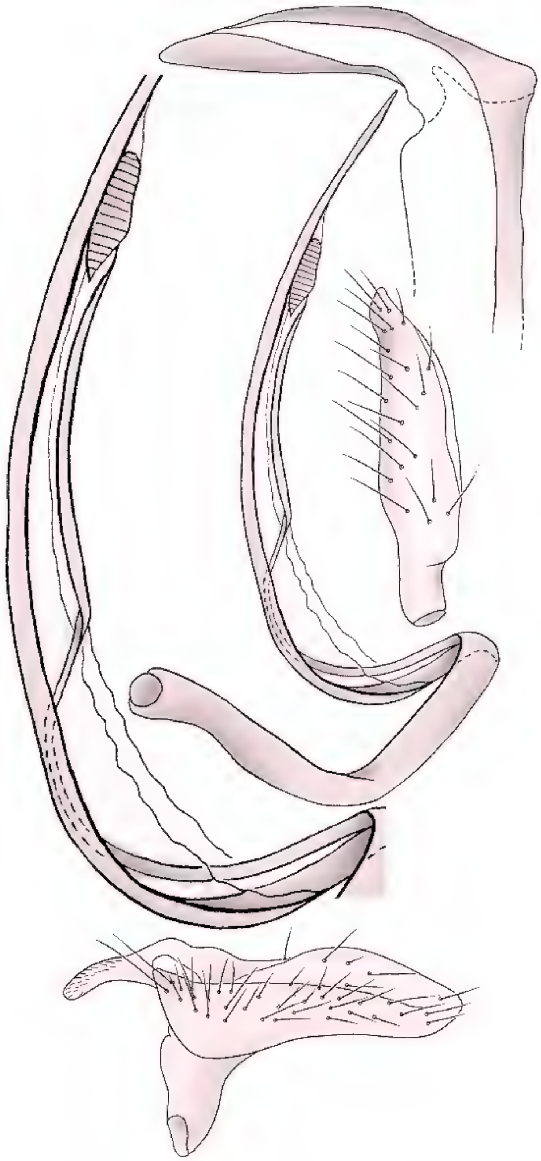


Fig. 37. *Wallabicoris sandstonensis*, male genitalia (AMNH_PBI 00090043).

those species only moderately projecting beyond the margin of the pygophore. Potentially confused with *W. commoni*, that species with uniform yellowish coloration, but larger with a mean total length of 5.60; secondary endosomal strap with a broad subbasal undulation similar to that seen in *W. sandstonensis*, but left paramere in *W. commoni* much more deep bodied than in *W. sandstonensis*.

DESCRIPTION: *Male*: Body moderately elongate, nearly parallel sided, total length 4.25–4.70, l/w = 3.29. COLORATION (pl. 5): Pronotum unicolorous yellow; hemelytron mostly yellow, endocorium with dirty areas; markings on cuneus present as partial but weak infuscation on posterior half; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly fumose over entire area, veins white; venter light yellow; antennal segment 1 yellow, with one or two black medial setae; antennal segment 2 yellow; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.56; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.49; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 37): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft more or less straight and erect; primary endosomal strap elongate apically, ratio lae/lsg 2.18; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.32; body tapered from base to apex; posterior margin without distinct protuber-

ance subapically; body more or less confluent with base; apex with short fingerlike process.

ETYMOLOGY: Named for the town of Sandstone, near the type locality.

HOSTS: Unknown.

DISTRIBUTION (map 4): Known from the Goldfields region of Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 79 km W of Sandstone, 28.03737°S 118.4983°E, 650 m, 26 Oct 1996, Schuh and Cassis, Light Trap, 1♂ (AMNH_PBI 00090050) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 79 km W of Sandstone, 28.03737°S 118.4983°E, 650 m, 26 Oct 1996, Schuh and Cassis, Light Trap, 6♂ (00090047–00090049, 00090053) (00087327, 00181907) (AM) 5♂ (00090043–00090046, 00090054) (AMNH), 2♂ (00090051, 00090052) (WAMP).

Wallabicoris schwartzi, new species
Figure 38; map 3; plate 5

DIAGNOSIS: Recognized by the chalk-white coloration of the body and appendages (pl. 5), the large size, with a mean total length of 5.97, and the structure of the male genitalia, the secondary strap of the endosoma complete and with a broad submedial undulation and the left paramere relatively short, without an elevated shoulder on the posterior process, closed over most of the dorsal surface, and only weakly exceeding the margin of the pygophore in repose; phallotheca heavily sclerotized, nearly black (fig. 38). Breeds on *Ozothamnus* spp. Somewhat larger than the similarly colored Asteraceae-feeding *W. baldersoni*, significantly larger than the Asteraceae-feeding *W. helichrysi*, *W. olearii*, and *W. ozothamni*, as well as the Lamiaceae-feeding *W. dicrastyli*; significantly larger still than the Thymelaeaceae-feeding *W. pinocchii* and the Lamiaceae-feeding *W. cassisi*, *W. lachnostachyos*, *W. newcastelii*, *W. paradicrastyli*, and *W. prostantheri*. Potentially confused with *W. rutidosi*, but that species much smaller, mean total length 4.87, and with a broken secondary endosomal strap.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.67–6.16, l/w = 3.43. COLORATION (pl. 5): Pronotum unicolorous pale, nearly white; hemelytron unicolorous pale, nearly white; markings on cuneus absent; membrane partially fumose, extreme base unicolorous with remainder, veins white; venter unicolorous pale or mostly so; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with a few brown or black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background colora-

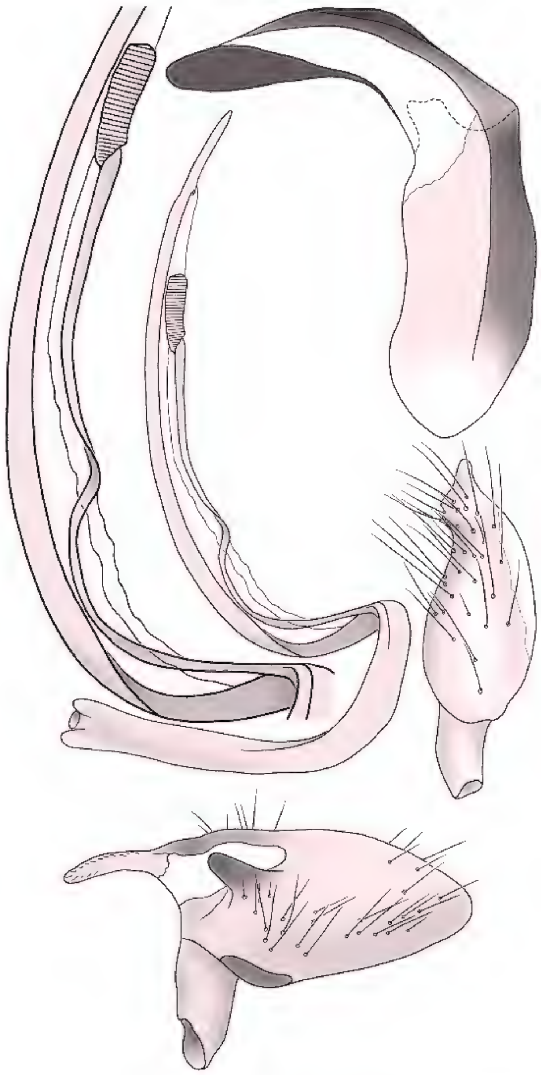


Fig. 38. *Wallabicoris schwartzi*, male genitalia (AMNH_PBI 00193992).

tion, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.64; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.42; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching onto abdomen. GENITALIA (fig. 38): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.17; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface with a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.25; body rounded laterally; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for Michael D. Schwartz, collector of all known specimens.

HOSTS: Recorded from *Ozothamnus* spp., including *O. ferrugineus* (Labill.) Sweet, *Ozothamnus argophyllus* (A. Cunn. ex DC.) Anderb. (pl. 6A, B) and *O. rosmarinifolius* (Labill.) DC (Asteraceae: Gnaphalieae).

DISTRIBUTION (map 3): Tasmania.

DISCUSSION: The three species of *Ozothamnus* recorded as hosts for *W. schwartzi* occur in the near-coastal areas of Victoria as well as in Tasmania. Additional collecting might therefore extend the range of *W. schwartzi* onto mainland Australia.

HOLOTYPE: **AUSTRALIA: Tasmania:** Arve River Picnic Ground on C632, 43.15874°S 146.8068°E, 172 m, 21 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus ferrugineus* (Labill.) Sweet (Asteraceae), det. Field ID, 1♂ (AMNH_PBI 00194028) (AM).

PARATYPES: **AUSTRALIA: Tasmania:** 11 km N of Cockle Creek on C636, 43.51878°S 146.88406°E, 36 m, 20 Jan 2004, M D. Schwartz and P.P. Tinerella, *Ozothamnus ferrugineus* (Labill.) Sweet (Asteraceae), det. Field ID, 4♀ (00194050–00194053) (AM), 3♂ (00194036–00194038), 5♀ (00194046–00194048, 00194049, 00194054) (AMNH). Arve River Picnic Ground on C632, 43.15874°S 146.8068°E, 172 m, 21 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus ferrugineus* (Labill.) Sweet (Asteraceae), det. Field ID, 4♂ (00194029–00194032) (AM), 3♂ (00194033–00194035), 3♀ (00194043–00194045) (AMNH), 3♂ (00194025–00194027), 3♀ (00194040–00194042) (ANIC). Tarraleah Power Station grounds, on A10, NW of Hamilton, 42.29848°S 146.4584°E, 366 m, 22 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus rosmarinifolius* (Labill.) DC. (Asteraceae), det. Field ID, 37♂ (00102002, 00102009–00102017–00102019–00102037, 00193987–00193992), 25♀ (00193993–00194005–00194006, 00194014–00194015–00194018–00194024) (AMNH), 3♂ (00102006–00102008), 2♀ (00194011, 00194012) (CNC), 6♂ (00101999–00102001, 00102003–00102005), 4♀ (00194007–00194010) (UNSW).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Tasmania:** 8.3 km S of Couta Rocks, C214, 41.23204°S 144.69202°E, 10 m, 24 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus argophyllus* (A. Cunn. ex DC.) Anderb. (Asteraceae), det. NSW staff NSW658250, 1♂ (00194087), 3♀ (00194088–00194090) (AM). 31.6 km NW of Queenstown on Zeehan Hwy, 41.91608°S 145.41711°E, 193 m, 23 Jan 2004, M.D. Schwartz and P.P. Tinerella, 1♂ (00194055), 1♀ (00194056) (AM).

Wallabicoris spyridiellus, new species
Figure 39, 40; map 2; plate 5

DIAGNOSIS: Among those species with numerous red spots on the dorsum (pl. 5), most similar to *W. spyridii* in the largely pale

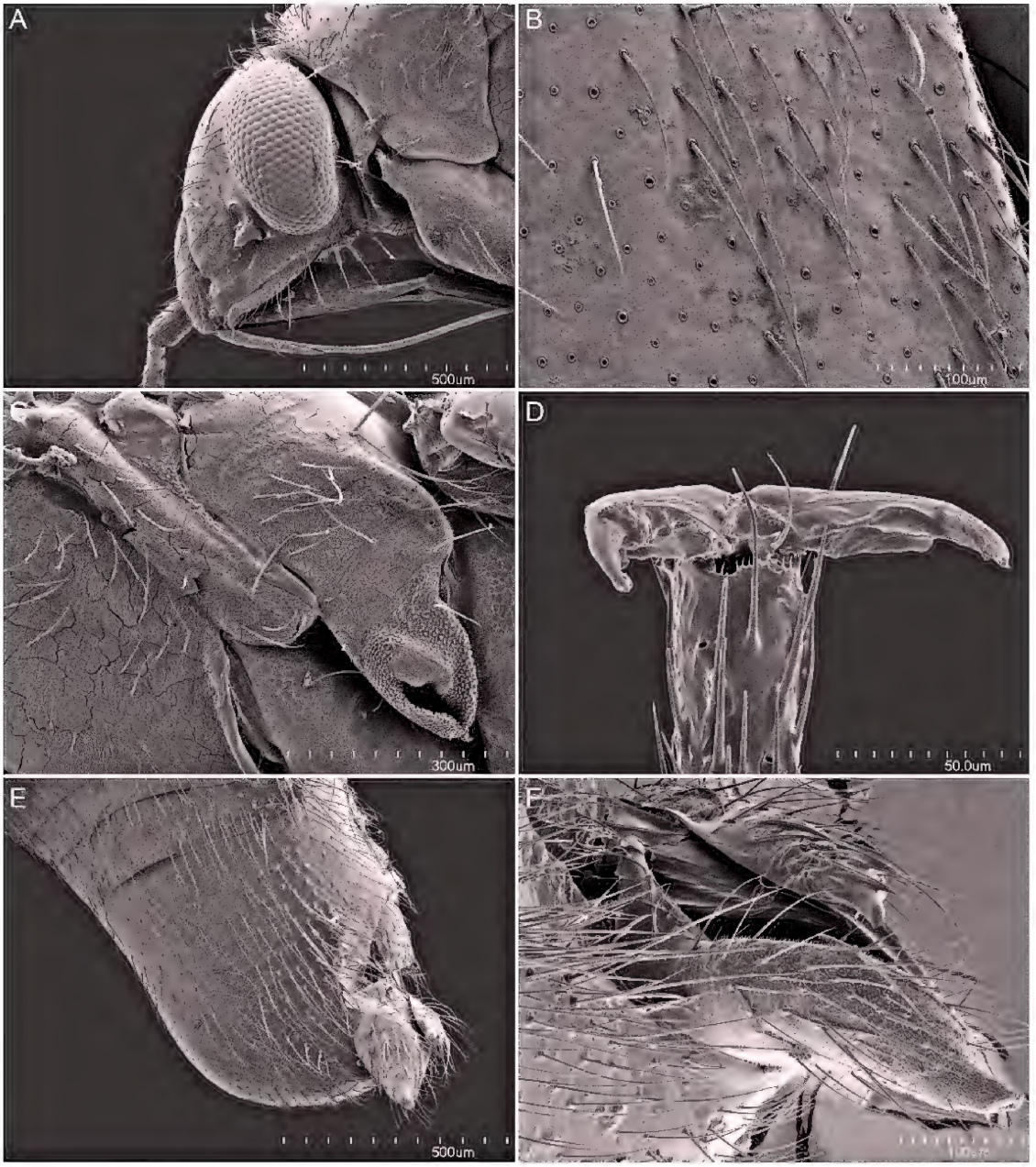


Fig. 39. *Wallabicoris spyridiellus*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium adjacent to costal margin. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in ventral view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00128841).

cuneus, although *W. spyridii* with the transverse fascia incomplete, not extending onto the exocorium usually lacking red spots, on the cuneus; secondary endosomal strap with a submedial bifurcation and left paramere elongate (fig. 40), similar to *W. cuneotinctus*, *W. pultenaei*, *W. thomasii*, and *W. trymalii*.

DESCRIPTION: *Male*: Body elongate ovoid, total length 3.93–4.12, l/w = 2.87. COLORATION (pl. 5): Pronotum pale with a few red

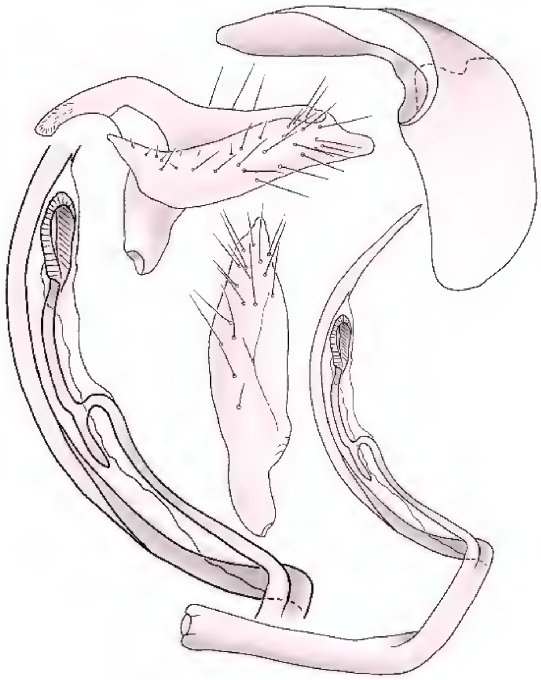


Fig. 40. *Wallabicoris spyridiellus*, male genitalia (AMNH_PBI 00128858).

spot; scutellum pale, sometimes with a few red spots; hemelytron with scattered red spots; complete, transverse, red fascia on corium present just anterior to cuneal fracture; markings on cuneus sometimes present as a few red spots; membrane with elongate, contrasting, fumose marking at extreme base, remainder fumose over entire area, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with suberect black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Weakly projecting, ratio wh/lh = 4.47 (fig. 39A); antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.48; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium very long, reaching well onto pygophore. GENITALIA (fig. 39E, F, 40): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.40; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, bifurcating at about midpoint; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface with a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective open over nearly entire length; body tapered toward apex, apex elongate nipplelike; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.00; body more or less parallel sided; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Spyridium* Fenzl (Rhamnaceae).

HOSTS: Recorded only from *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae) (pl. 11A, B).

DISTRIBUTION (map 2): Known from the Esperance area of south coastal Western Australia.

DISCUSSION: *Spyridium globulosum* has a coastal distribution ranging from Shark Bay in the Northwest to somewhat east of Esperance. We might therefore predict a wider distribution for *W. spyridiellus* on the basis of the host distribution.

HOLOTYPE: **AUSTRALIA: Western Australia:** Duke of Orleans Bay, Table Island Picnic Area, 33.90852°S 122.5938°E, 50 m, 24 Nov 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID PERTH 05672066, 1♂ (AMNH_PBI 00087997) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 2.3 km E of Esperance on Fisheries

Road, 33.81039°S 121.9334°E, 10 m, 23 Nov 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. PERTH staff PERTH 05672066, 1♂ (00129743), 1♀ (00129744) (AMNH). Cape Arid National Park, Thomas River Campground, 33.8539°S 123.0126°E, 20 m, 24 Nov 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID PERTH 05672066, 1♂ (00087989) (AM), 6♂ (00128837–00128842), 8♀ (00128844–00128851) (AMNH), 1♂ (00128843), 5♀ (00087990–00087992, 00128852–00128853) (WAMP). Duke of Orleans Bay, Table Island Picnic Area, 33.90852°S 122.5938°E, 50 m, 24 Nov 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID, 2♂ (00087342, 00087542), 1♀ (00087343) (AM), 1♀ (00088000) (AMNH), 1♂ (00087998) (UNSW), 1♂ (00087996), 3♀ (00087999, 00088001–00088002) (WAMP). Hellfire Bay, Cape Le Grande National Park, 34.00398°S 122.1696°E, 30 m, 24 Nov 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID, 9♂ (00087890–00087898), 10♀ (00087900–00087905, 00087907, 00087914–00087916) (AM), 10♂ () (00087884, 00087886, 00128855, 00128857–00128863), 15♀ (00128871–00128885) (AMNH), 1♂ (00087899), 2♀ (00087912, 00087913) (UNSW), 6♂ (00087885, 00087887–00087889, 00128854, 00128856), 11♀ (00087908–00087911, 00128864–00128870) (WAMP).

Other Specimens Examined: **AUSTRALIA: Western Australia:** Hellfire Bay, Cape Le Grande National Park, 34.00398°S 122.1696°E, 30 m, 24 Nov 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID, 1♂ (00087906) (AM).

Wallabicoris spyridii, new species
Figures 41, 42; map 2; plate 5

Diagnosis: Among those species with numerous red spots on the dorsum (pl. 5), most similar to *W. spyridiellus* in the largely pale cuneus, although *W. spyridiellus* always with a complete red transverse fascia posteriorly on the corium and sometimes with red spots on the cuneus; similar to *W. rhamnicola* in the left paramere being short, deep bodied, and blunt apically, secondary endosomal strap incomplete, with a large gap between proximal end of secondary gonopore and remainder of strap (fig. 42); the broken strap also seen in a similar form in the Rhamnaceae feeder *W. pomaderri*, but that species without red spots on the dorsum and with an apically acuminate left paramere, and in *W. rutidosi*, but in that species the strap broken medially and with a relatively long section attached to the secondary gonopore.

Description: *Male*: Body weakly elongate, weakly ovoid, total length 3.64–3.82, l/w = 2.95. COLORATION (pl. 5): Pronotum pale with red botches and spots; scutellum deep red; hemelytron mostly red on medial area of clavus; partial red fascia present on endocorium corium and clavus present anterior to cuneal fracture; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly fumose over entire area, veins white; venter heavily red laterally; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with reclining black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.51 (fig. 41A); antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.50; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium reaching to margin of pygophore. GENITALIA (fig. 41E, F, 42): **Endosoma:** Base very long, with a tight U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.25; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching midway to gonopore from major bend in endosoma; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body relatively short, just exceeding margin

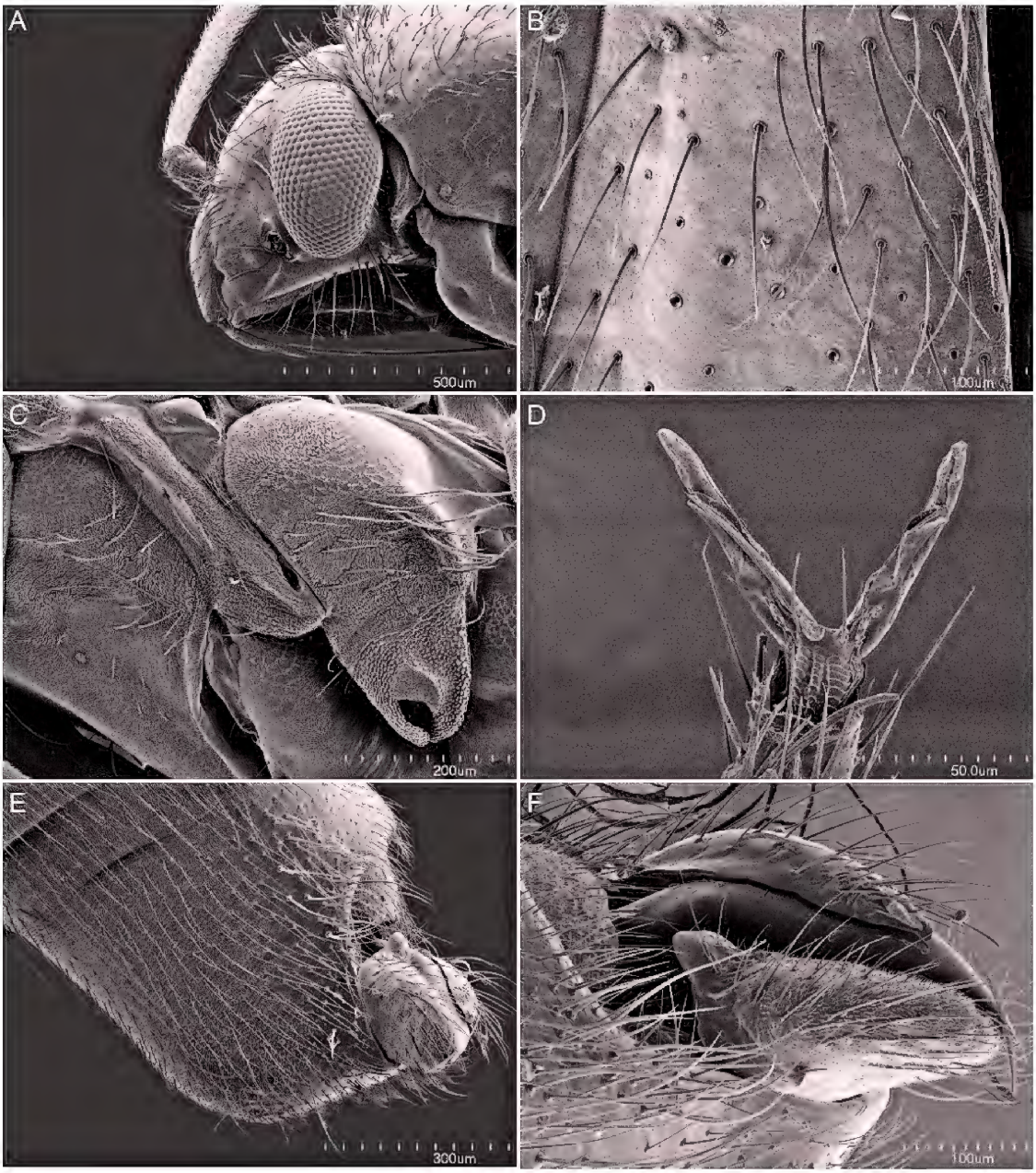


Fig. 41. *Wallabicoris spyridii*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium near base. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in ventral view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00129915).

of pygophore; in dorsal perspective closed over about one-half length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately

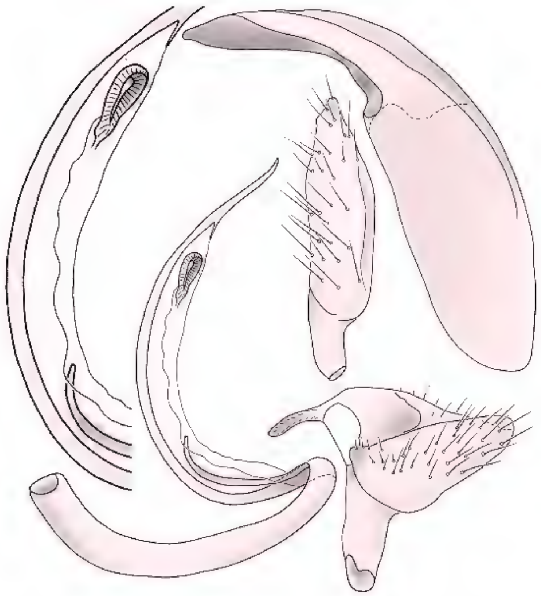


Fig. 42. *Wallabicoris spyridii*, male genitalia (AMNH_PBI 00129916).

elongate, ratio lrp/wrp 3.93; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for its host genus, *Spyridium* Fenzl (Rhamnaceae).

HOSTS: Recorded from *Spyridium* sp. and *S. vexilliferum* (Hook.) Reissek (Rhamnaceae). The very few specimens from *Calytrix tetragona* Labill. (Myrtaceae) and *Eutaxia* (Fabaceae) are certainly the result of mislabeling or commingling of specimens in the field.

DISTRIBUTION (map 2): Known from southeastern South Australia.

DISCUSSION: *Spyridium vexilliferum* has a distribution ranging from Eyre Peninsula southeast onto Tasmania, seldom occurring more than about 100 km from the coast. We might therefore predict a wider distribution for *W. spyridiellus* on the basis of the host distribution.

The material listed under "Other Specimens Examined" [3♂ (00087235, 00130194–00130195), 5♀ (00130196–00130198, 00130402, 00367955)] bears the same host labeling as many specimens treated as paratypes and has near identical male genitalic structure. Nonetheless, the coloration of the dorsum is almost entirely red-orange, with a few spots distinguishable on the head and anterior lobe of the pronotum. Additional fieldwork and host information should clarify whether these specimens represent the range of coloration in *W. spyridii* or whether they are a distinct taxon.

HOLOTYPE: **AUSTRALIA: South Australia:** Scorpion Springs Cons. Park, 35.62648°S 140.8698°E, 100 m, 10 Nov 1998, Schuh, Cassis, Silveira, *Spyridium* sp. (Rhamnaceae), det. Royal Bot Gard. NSW NSW427521, 1♂ (AMNH_PBI 00129921) (SAMA).

PARATYPES: **AUSTRALIA: South Australia:** Scorpion Springs Cons. Park, 35.62648°S 140.8698°E, 100 m, 10 Nov 1998, Schuh, Cassis, Silveira, *Spyridium* sp. (Rhamnaceae), det. Royal Bot Gard. NSW NSW427521, 18♂ (00087162, 00087447, 00087762–00087769, 00087798–00087805), 62♀ (00087163, 00087754–00087755, 00087771–00087777, 00087779–00087781, 00087784–00087789, 00087808, 00087816–00087836, 00129997–00130017) (AM), 35♂ (00129892–00129896–00129900, 00129909–00129920, 00129922–00129923–00129927–00129929–00129935) 52♀ (00129940–00129945, 00129950, 00129958–00129973–00129993, 00130409–00130417) (AMNH), 2♂ (00129907, 00129908), 3♀ (00087790–00087792) (ANIC), 2♂ (00129905, 00129906), 3♀ (00087793–00087795) (CNC), 7♂ (00129936–00129937, 00130403–00130407), 7♀ (00129951–00129957) (SAMA), 6♂ (00087742–00087747), 8♀ (00087796, 00087809–00087815) (UNSW), 2♂ (00129903, 00129904), 2♀ (00087782, 00087783) (USNM), 2♂ (00129901, 00129902), 3♀ (00129994–00129996) (ZISP). **Victoria:** Discovery Bay National Park, Swan Lake Beach area, 38.21766°S 141.3098°E, 33 m, 08 Nov 2002, Cassis, Schuh, Schwartz, Silveira, *Spyridium vexilliferum* (Hook.) Reissek (Rhamnaceae), det. NSW staff NSW658136, 1♂ (00172722) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: South Australia:** 18 km S of Bews, Ngarkat Cons. Park, 35.55197°S 140.4332°E, 60 m, 09 Nov 1998, Schuh, Cassis, Silveira, *Eutaxia microphylla* (R. Br.) J. Black (Fabaceae), det. Det: Royal Bot Gard. NSW NSW427664, 1♂ (00087993), 1♀ (00087995), 1 nymph (00087994) (AM). Scorpion Springs Cons. Park, 35.62648°S

140.8698°E, 100 m, 10 Nov 1998, Schuh, Cassis, Silveira, *Spyridium* sp. (Rhamnaceae), det. Royal Bot Gard. NSW NSW427521, 1♂ (00087839), 1 nymph (00087770) (AM), 3♂ (00087235, 00130194–00130195), 5♀ (00130196–00130198, 00130402, 00367955), 3 nymphs (00129938–00129939, 00130408) (AMNH), 1 nymph (00087797) (UNSW). Scorpion Springs Cons. Park, 35.62872°S 140.8598°E, 100 m, 09 Nov 1998, Schuh, Cassis, Silveira, *Calytrix tetragona* Labill. (Myrtaceae), det. Royal Bot Gard. NSW NSW427358, 1♀ (00087883) (AM).

Wallabicoris tasmanensis, new species
Figure 43; map 3; plate 5

DIAGNOSIS: Recognized by the relatively large size and broad body, mean total length 5.83, mean ratio total length/with pronotum 3.36, the erect to suberect, heavy, black setae covering most of the dorsum, and the weakly quadrate pattern of coloration on the dorsum (fig. 43). Left paramere greatly elongate (fig. 43). Coloration similar to *W. coolabah*, but that species with pale setae on dorsum and with a more slender body form; black setae on dorsum similar to *W. craspedii*, but that species with more uniform coloration of the entire dorsum and with a more elongate body form, mean ratio total length/pronotum width 3.60, as opposed to 3.36 in *W. tasmanensis*.

DESCRIPTION: *Male*: Body moderately elongate, nearly parallel sided, total length 5.52–6.35, l/w = 3.37. COLORATION (pl. 5): Pronotum unicolorous with anterior lobe weakly brown, posterior lobe faded green; hemelytron exocorium mostly pale, endocorium pale with a dirty area near apex of clavus; markings on cuneus absent; membrane with elongate, contrasting, fumose marking at extreme base, remainder strongly fumose over entire area, veins white; venter light green; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with suberect black setae, especially on pronotum, without sericeous or woolly setae.

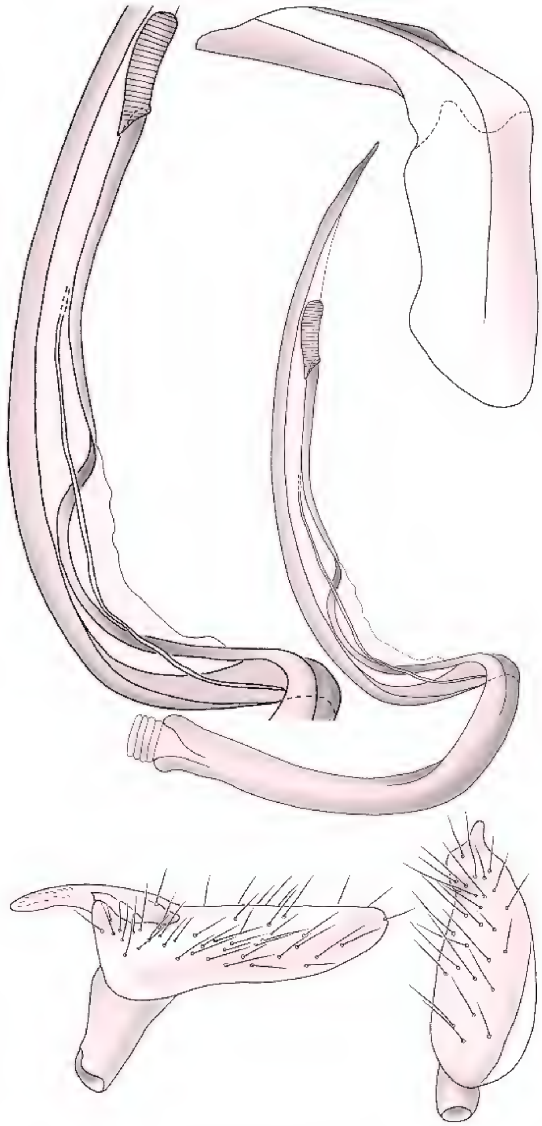


Fig. 43. *Wallabicoris tasmanensis*, male genitalia (AMNH_PBI 00194105).

STRUCTURE: **Head:** Somewhat projecting, ratio wh/lh = 3.58; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderate, ratio iod/wh = 0.47; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 43): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.31; apex of primary endosomal

strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching midway to gonopore from major bend in endosoma, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.00; body rounded laterally; posterior margin with a distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the area of occurrence, Tasmania.

HOSTS: Recorded from *Ozothamnus* spp., including, *O. ferrugineus* (Labill.) Sweet, *O. hookeri* Sond. (pl. 6C, D), and *O. rosmarinifolius* (Labill.) DC (Asteraceae: Gnaphalieae).

DISTRIBUTION (map 3): Tasmania.

DISCUSSION: The three species of *Ozothamnus* recorded as hosts for *W. tasmanensis* occur in the near-coastal areas of Victoria as well as in Tasmania. Additional collecting might therefore extend the range of *W. tasmanensis* onto mainland Australia.

HOLOTYPE: **AUSTRALIA: Tasmania:** Southwest National Park: Cockle Creek, on Whale Walk Track, 43.57847°S 146.901°E, 13 m, 20 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus ferrugineus* (Labill.) Sweet (Asteraceae), det. NSW staff NSW658238, 1♂ (AMNH_PBI 00194096) (AM).

PARATYPES: **AUSTRALIA: Tasmania:** 12 km N of Cradle Valley on Iris River, 41.55148°S 145.9622°E, 782 m, 26 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus hookeri* Sond. (Asteraceae), det. NSW staff NSW658265, 3♂ (00194058–00194060), 2♀ (00194083, 00194084) (AM), 13♂ (00194064–00194072–00194076), 5♀ (00194077–00194079, 00194081–00194082) (AMNH), 1♂ (00194057), 1♀ (00194085) (ANIC), 3♂ (00194061–00194063), 1♀ (00194080) (UNSW). 13.8 km N of Crabtree on Jeffery's track (C6180), 42.88893°S 147.05144°E, 643 m, 21 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus rosmarinifolius* (Labill.) DC. (Asteraceae), det. NSW staff NSW658244, 1♂ (00194039) (AMNH). Southwest National Park: Cockle Creek, on Whale Walk Track, 43.57847°S 146.901°E, 13 m, 20 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus ferrugineus* (Labill.) Sweet (Asteraceae), det. NSW staff NSW658238, 3♂ (00194093–00194095), 2♀ (00194106, 00194107) (AM), 8♂ (00194091, 00194099–00194105), 8♀ (00194109–00194116) (AMNH), 1♂ (00194092), 1♀ (00194117) (ANIC), 2♂ (00194097, 00194098), 1♀ (00194108) (UNSW). Vale Belvoir Conservation Area, 22 km E of junction of Murchison Hwy and C132, 41.55565°S 145.90395°E, 895 m, 25 Jan 2004, M.D. Schwartz and P.P. Tinerella, *Ozothamnus hookeri* Sond. (Asteraceae), det. NSW staff NSW658259, 3♂ (00194119–00194121), 2♀ (00194139, 00194140) (AM), 9♂ (00194122, 00194126–00194133), 5♀ (00194134–00194138) (AMNH), 1♂ (00194118) (ANIC), 3♂ (00194123–00194125), 2♀ (00194141, 00194142) (UNSW).

Wallabicoris thomasii, new species
Figure 44; map 2; plate 5

DIAGNOSIS: Among those species with numerous red spots on the dorsum (pl. 5), most similar to *W. cuneotinctus* and *W. trymalii* in the complete transverse fascia posteriorly on the corium, the cuneus red at least on the posterior half, the secondary endosomal strap with a submedial bifurcation and left paramere elongate (fig. 44) and extending well beyond the margin of the pygophore. Separated from *W. cuneotinctus* and *W. trymalii* by the less intense red spotting of the dorsum in those species; distinguished from *W. cuneotinctus* by the occurrence of that species on the south coast of Victoria instead of the south coast of Western Australia, and from *W. trymalii* by feeding on *Trymalium* (Rhamnaceae) rather than *Thomasia* and *Lasiopetalum* (Sterculiaceae).

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 4.06–4.16,

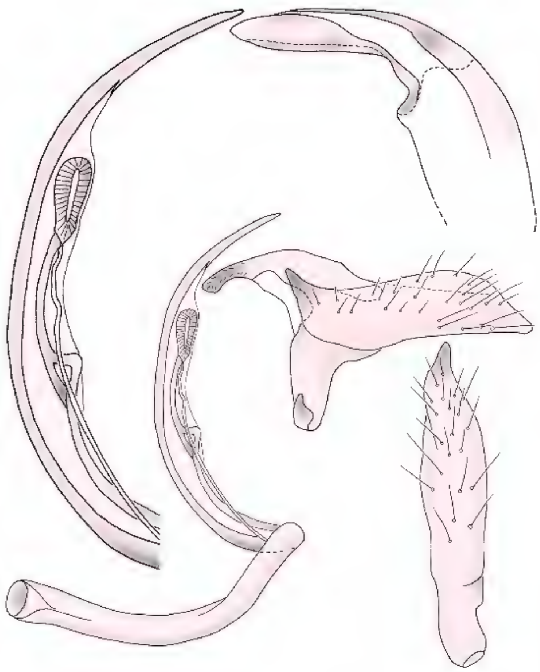


Fig. 44. *Wallabicoris thomasii*, male genitalia (AMNH_PBI 00128562).

l/w = 3.02. COLORATION (pl. 5): Pronotum pale with numerous red botches; hemelytron with red botches; diffuse red fascia on corium/clavus present anterior to cuneal fracture and on clavus; markings on cuneus present as individual or coalesced red blotches; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, veins white; venter heavily red laterally; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium unicolorous red; hind femora with many brown or black spots; hind tibial spines dark with conspicuous dark spots at bases. SURFACE AND VESTITURE: Dorsum with suberect black setae, especially on pronotum, intermixed with pale setae on hemleytron, and with some sericeous or woolly setae. STRUCTURE: **Head:** Moderately projecting, ratio wh/lh = 3.08; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space small, ratio iod/wh = 0.54; eyes leaving gena broadly exposed in lateral view (hg5–14/he20); labium very long, reaching well onto pygophore. GENITALIA (fig. 44): **Endosoma:** Base very long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.50; apex of primary endosomal strap distinctly curving; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, bifurcating at about midpoint; secondary gonopore seen frontally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body very elongate, greatly exceeding margin of pygophore; in dorsal perspective closed over about one-half length; body tapered toward apex in lateral perspective; anterior process arising slightly forward of posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.67; body more or less parallel sided; posterior margin without distinct protuberance subapically; body more or less confluent with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Thomasia* Gay (Sterculiaceae).

HOSTS: Recorded from *Thomasia heterophylla* E.M. Benn. & K. Shepherd (pl. 11D), *Lasiopetalum floribundum* Benth. (Sterculiaceae), *Chorilaena quercifolia* Endl. (Rutaceae), and *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae) (pl. 11A, B).

DISTRIBUTION (map 2): Southwestern Western Australia.

DISCUSSION: The four species recorded as hosts for *W. thomasii* have a combined distribution along the coastal Western Australia ranging from Shark Bay to Esperance. *Spyridium globulosum* has by far the widest distribution, the other three being restricted to the extreme southwest and the area of Cape Leeuwin. If *W. thomasii* is indeed breeding on *Spyridium globulosum* we might expect it to have a somewhat wider distribution than presently known.

HOLOTYPE: **AUSTRALIA: Western Australia:** 10.3 km N of South Coast Hiway on North Walpole Road toward Mt. Frankland,

34.89687°S 116.7099°E, 190 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Thomasia heterophylla* E.M. Benn. & K. Shepherd (Sterculiaceae), det. field ID PERTH 054671418, 1♂ (AMNH_PBI 00128560) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 2.1 km W of Broke Inlet Road on Chesapeak Road, D'Entrecasteaux National Park, 34.8918°S 116.4644°E, 30 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Spyridium globulosum* (Labill.) Benth. (Rhamnaceae), det. field ID PERTH 05672066, 1♂ (00089546), 1♀ (00089547) (AM). 3.5 km S of Mt. Chudalup, D'Entrecasteaux National Park, 34.80198°S 116.0753°E, 50 m, 16 Dec 1997, Schuh, Cassis, Brailovsky, *Chorilaena quercifolia* Endl. (Rutaceae), det. PERTH staff PERTH 05055350, 1♂ (00087318), 3♀ (00087319, 00087847–00087848) (AM). 10.3 km N of South Coast Hiway on North Walpole Road toward Mt. Frankland, 34.89687°S 116.7099°E, 190 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Thomasia heterophylla* E.M. Benn. & K. Shepherd (Sterculiaceae), det. field ID PERTH 054671418, 3♂ (00088808–00088810), 1♀ (00088823) (AM), 6♂ (00128559, 00128561–00128564, 00128566), 5♀ (00128576, 00128578–00128581) (AMNH), 2♂ (00128565, 00128567), 2♀ (00088821, 00128577) (UNSW), 3♂ (00128558, 00128568–00128569), 3♀ (00088822, 00088824, 00128582) (WAMP). Walpole-Nornalup National Park just W of Walpole, 34.98624°S 116.713°E, 40 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Lasiopetalum floribundum* Benth. (Sterculiaceae), det. PERTH staff PERTH 05671183, 1♀ (00087718) *Lasiopetalum floribundum* Benth. (Sterculiaceae), det. PERTH staff PERTH 05671183, 2♂ (00087716, 00087717), 1♀ (00087720) 1♂ (00087715), 2♀ (00087721, 00087722) (AM), 1♀ (00087719) (WAMP), *Thomasia heterophylla* E.M. Benn. & K. Shepherd (Sterculiaceae), det. PERTH staff PERTH 05671418, 1♂ (00129946), 3♀ (00129947–00129949) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 10.3 km N of South Coast Hiway on North Walpole Road toward Mt. Frankland, 34.89687°S 116.7099°E, 190 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Thomasia heterophylla* E.M. Benn. & K. Shepherd (Sterculiaceae), det. field ID PERTH 054671418, 6 nymphs (00088815–00088820) (AM), 6 nymphs (00128570–00128575) (AMNH). Walpole-Nornalup National Park just W of Walpole, 34.98624°S 116.713°E, 40 m, 02 Dec 1999, R.T. Schuh and G. Cassis, *Lasiopetalum floribundum* Benth. (Sterculiaceae), det. PERTH staff PERTH 05671183, 8 nymphs (00087723–00087730) (AM). Nr. Jarrahdale, Serpentine Dam, 32.402°S 116.103°E, 09 Dec 1971, J.A. Slater, *Lasiopetalum floribundum* (Sterculiaceae), 5♂ (00181892–00181896) (AMNH).

Wallabicoris trymalii, new species
Figure 45; map 2; plate 5

DIAGNOSIS: Among those species with numerous red spots on the dorsum, most similar to *W. cuneotinctus* and *W. thomasii* in the complete transverse fascia posteriorly on the corium, the cuneus red at least on the posterior half (pl. 5), the secondary endosomal strap with a submedial bifurcation and left paramere elongate (fig. 45) and extending

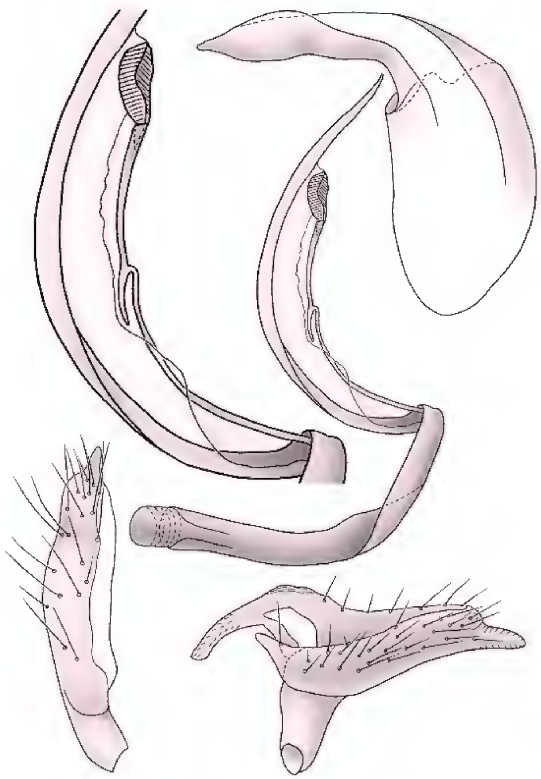


Fig. 45. *Wallabicoris trymalii*, male genitalia (AMNH_PBI 00089619).

well beyond the margin of the pygophore. Separated from *W. thomasii* by the more intense red spotting of the dorsum in that species; distinguished from *W. cuneotinctus* by the occurrence of that species on the south coast of Victoria instead of the extreme southwest coast of Western Australia, and from *W. thomasii* by feeding on *Thomasia* and *Lasiopetalum* (Sterculiaceae) rather than *Trymalium* (Rhamnaceae).

DESCRIPTION: *Male*: Body weakly elongate, weakly ovoid, total length 4.01–4.30, l/w = 2.99. COLORATION (pl. 5): Pronotum with posterior lobe heavily covered with red or carmine botches; scutellum with some red or carmine spots or blotches, apex pale; hemelytron with a few large red or carmine spots on anterior half of corium; solid, broad, red fascia on corium just anterior to cuneal fracture; clavus with solid red markings over most of area, partially pale near apex; cuneus pale only along cuneal fracture, solid orange or red over remaining area; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly to strongly fumose over entire area, veins white; venter unicolorous pale or mostly so; antennal segment 1 unicolorous pale, with one or two black medial setae; antennal segment 2 unicolorous pale; labium pale with segment 4 heavily infuscate; hind femora with many brown or black spots; hind tibial spines dark with very small dark bases. SURFACE AND VESTITURE: Dorsum with erect or suberect black setae, and with some sericeous or woolly setae. STRUCTURE: **Head:** Weakly projecting, ratio wh/lh = 4.44; antennal fossa with ventral margin of fossa at ventral margin of eye; interocular space relatively small, ratio iod/wh = 0.51; eyes occupying entire height of head in lateral view (hg0–1/he20); labium very long, reaching well onto pygophore. GENITALIA (fig. 45): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.17; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching to level of secondary gonopore, bifurcating at about midpoint; secondary gonopore seen laterally in lateral view of endosoma; fingerlike protuberance at distal margin of secondary gonopore absent. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface without a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective open over nearly entire length; body tapered toward apex, apex elongate nipple-like; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process flattened, broadest at angulate apex; posterior process with strongly projecting shoulder at base; base of posterior process at least somewhat elevated above level of paramere body. **Right Paramere:** Body moderately elongate, ratio lrp/wrp 3.83; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with a weakly elongate fingerlike process.

ETYMOLOGY: Named for the host genus, *Trymalium* Fenzl (Rhamnaceae).

HOSTS: Recorded only from *Trymalium odoratissimum* Lindl. subsp. *odoratissimum* (= *T. floribundum* Steud.) (pl. 11C), including *T. f. trifidum* B.L. Rye and *T. f.* forma *fulva* Steud. (Rhamnaceae).

DISTRIBUTION (map 2): Known from areas near the coast of extreme southwestern Western Australia.

DISCUSSION: *Trymalium floribundum* is distributed in near-coastal areas from the vicinity of Perth south and west to about Fitzgerald River. Additional collecting might therefore extend the range of *W. trymalii* somewhat further along the coast in far southwestern Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** 2 km W of Caves Road, Leeuwin Naturaliste National Park, 34.1497°S 115.0657°E, 100 m, 04 Dec 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Trymalium floribundum trifidum* B.L. Rye (Rhamnaceae), det. Field ID PERTH 05670829, 1♂ (AMNH_PBI 00089625) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** 2 km W of Caves Road, Leeuwin Naturaliste National Park, 34.1497°S 115.0657°E, 100 m, 04 Dec 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Trymalium floribundum trifidum* B.L. Rye (Rhamnaceae), det. Field ID PERTH 05670829, 1♂ (00089624) (AM), 1♂ (00087117), 1♀

(00087118) (WAMP). Ellis Brook Valley Reserve, 32.06388°S 116.08333°E, 150 m, 29 Nov 1998, G. Cassis, *Trymalium floribundum* forma *fulva* Steud. (Rhamnaceae), det. WA Herbarium Staff PERTH 05227453, 2♂ (00089621, 00089622) (AM), *Trymalium floribundum* forma *fulva* Steud. (Rhamnaceae), det. WA Herbarium Staff PERTH 05227453, 2♂ (00089619, 00089620) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** 2 km W of Caves Road, Leeuwin Naturaliste National Park, 34.1497°S 115.0657°E, 100 m, 04 Dec 1999, R.T. Schuh, G. Cassis, & R. Silveira, *Trymalium floribundum trifidum* B.L. Rye (Rhamnaceae), det. Field ID PERTH 05670829, 1 nymph (00089626) (AM).

Wallabicoris uptoni, new species
Figure 46; map 4; plate 5

DIAGNOSIS: Recognized by the large size and the elongate slender body form, total length 5.58, ratio length/width 3.73, the pale setae on the dorsum, the quadrate pattern of coloration on the dorsum (pl. 5), and the form of the male genitalia, the secondary endosomal strap with a moderately broad subbasal undulation, a moderately long left paramere, and a lanceolate right paramere (fig. 46). Separated from other large species with an elongate body form as follows: from *W. coolabah* by the short submedial twist in the secondary endosomal strap and the short left paramere; from *W. craspedii* by the heavy black setae on the dorsum and the broad subbasal undulation in the secondary endosomal strap in that species; and from *W. norsemanius* by the longitudinal rather that quadrate color pattern and the short submedial twist in the secondary endosomal strap of that species.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.52–5.62, l/w = 3.73. COLORATION (pl. 5): Pronotum unicolorous faded brown, head and pronotum with a medial longitudinal pale stripe; hemelytron mostly pale, endocorium and exocorium with faded brown areas, clavus mostly faded brown; markings on cuneus present as partial infuscation on posterior two-thirds; membrane with elongate, contrasting, fumose marking at extreme base, remainder weakly fumose over entire area, veins white; venter heavily infuscate, at least on mesopleuron and abdomen; antennal segment 1 dirty yellow, with one or two black medial setae; antennal segment 2 dirty yellow; labium generally infuscate, heavily so apically; hind femora unicolorous faded brown, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.67; antennal fossa with ventral margin 1 diameter above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.41; eyes leaving gena moderately exposed in lateral view (hg3/he20); labium just reaching onto abdomen. GENITALIA (fig. 46): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap weakly elongate apically, ratio lae/lsg 2.00; apex of primary endosomal strap nearly straight; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore,

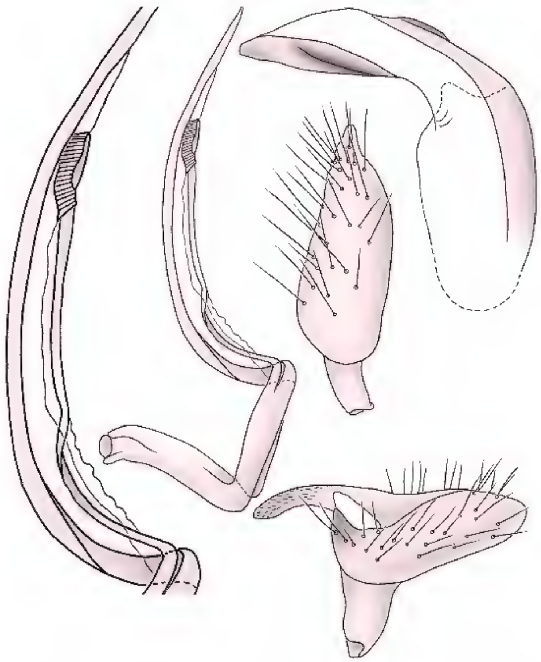


Fig. 46. *Wallabicoris uptoni*, male genitalia (AMNH_PBI 00168791).

reaching to level of secondary gonopore, with a broad submedial undulation; secondary gonopore seen laterally in lateral view of endosoma. **Phallotheca:** Smoothly curving on dorsal margin; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body not distinctly tapering toward apex; anterior process arising at posterior margin of shaft; anterior process directed vertically; posterior process appearing tubular, fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body short and broad, ratio lrp/wrp 3.25; body more or less parallel sided; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for M.S. Upton, collector of the only known specimens.

HOSTS: Unknown.

DISTRIBUTION (map 4): Western Nullarbor Plain, Western Australia.

HOLOTYPE: **AUSTRALIA: Western Australia:** Madura, 31.928°S 126.978°E, 02 Oct 1968, Key, Upton and Balderson, 1♂ (AMNH_PBI 00168793) (ANIC).

PARATYPES: **AUSTRALIA: Western Australia:** Madura, 31.928°S 126.978°E, 02 Oct 1968, Key, Upton and Balderson, 1♂ (00168791) (AMNH), 1♂ (00168792) (ANIC).

Wallabicoris waitzii, new species
Figures 47, 48; map 3; plate 5

DIAGNOSIS: Recognized among those species with heavily yellow coloration by the intensely and uniformly yellow dorsum (pl. 5), by the elongate, slender body, mean total length 5.59, mean ratio length/width 3.80, the head conspicuously projecting beyond the anterior margin of the eyes, ratio head length/head width 2.70, the left paramere greatly elongate and strongly projecting beyond margin of pygophore (fig. 47E, F), and the secondary endosomal strap with a short, shallow submedial undulation (fig. 48). Breeds on *Waitzia acuminata* (Asteraceae). Similar to *W. sandstonensis* in the elongate left paramere strongly projecting beyond the margin of the pygophore, but coloration of dorsum in *W. sandstonensis* not so uniformly and intensely yellow and the body not nearly as long and slender. Distinguished from *W. chrysocephali*, *W. maralinga*, *and W. rutidosi* by the much shorter, more deep-bodied left paramere in those species only moderately projecting beyond the margin of the pygophore. Potentially confused with *W. commoni*, but yellowish coloration in that species much less intense than in *W. waitzii*, secondary endosomal strap with a short medial undulation rather than the broad subbasal undulation seen in *W. commoni*, and left paramere in *W. waitzii* not nearly so deep bodied as in *W. commoni*.

DESCRIPTION: *Male*: Body greatly elongate, parallel sided, total length 5.27–5.85, l/w = 3.80. COLORATION (pl. 5): Pronotum unicolorous yellow, calli weakly brown; hemelytron, including cuneus, unicolorous yellow; membrane with elongate, contrasting, fumose marking at extreme base, remainder partially fumose, especially within cells, veins white; venter light yellow; antennal segment 1 yellow to dirty yellow, with one or two black medial setae; antennal segment 2 yellow to dirty yellow; labium pale with segment 4 heavily infuscate; hind femora unicolorous pale, without black spots; hind tibial spines dark without dark spots at bases. SURFACE AND VESTITURE: Dorsum with reclining simple setae matching background coloration, without sericeous or woolly setae. STRUCTURE: **Head:** Elongate, projecting anteriorly, ratio wh/lh = 2.70 (fig. 47A); antennal fossa with ventral margin 2 diameters above ventral margin of eye; interocular space moderately large, ratio iod/wh = 0.38; eyes occupying entire height of head in lateral view (hg0–1/he20); labium just reaching to midpoint of abdomen. GENITALIA (fig. 47, E, F, 48): **Endosoma:** Base moderately long, with an open U-shaped bend; distal half of shaft smoothly curving; primary endosomal strap elongate apically, ratio lae/lsg 2.50; apex of primary endosomal strap weakly arcuate; secondary endosomal strap very slender, of uniform width from endosomal bend to gonopore, reaching midway to gonopore from major bend in endosoma, with a short submedial undulation; secondary gonopore seen laterally in lateral view of

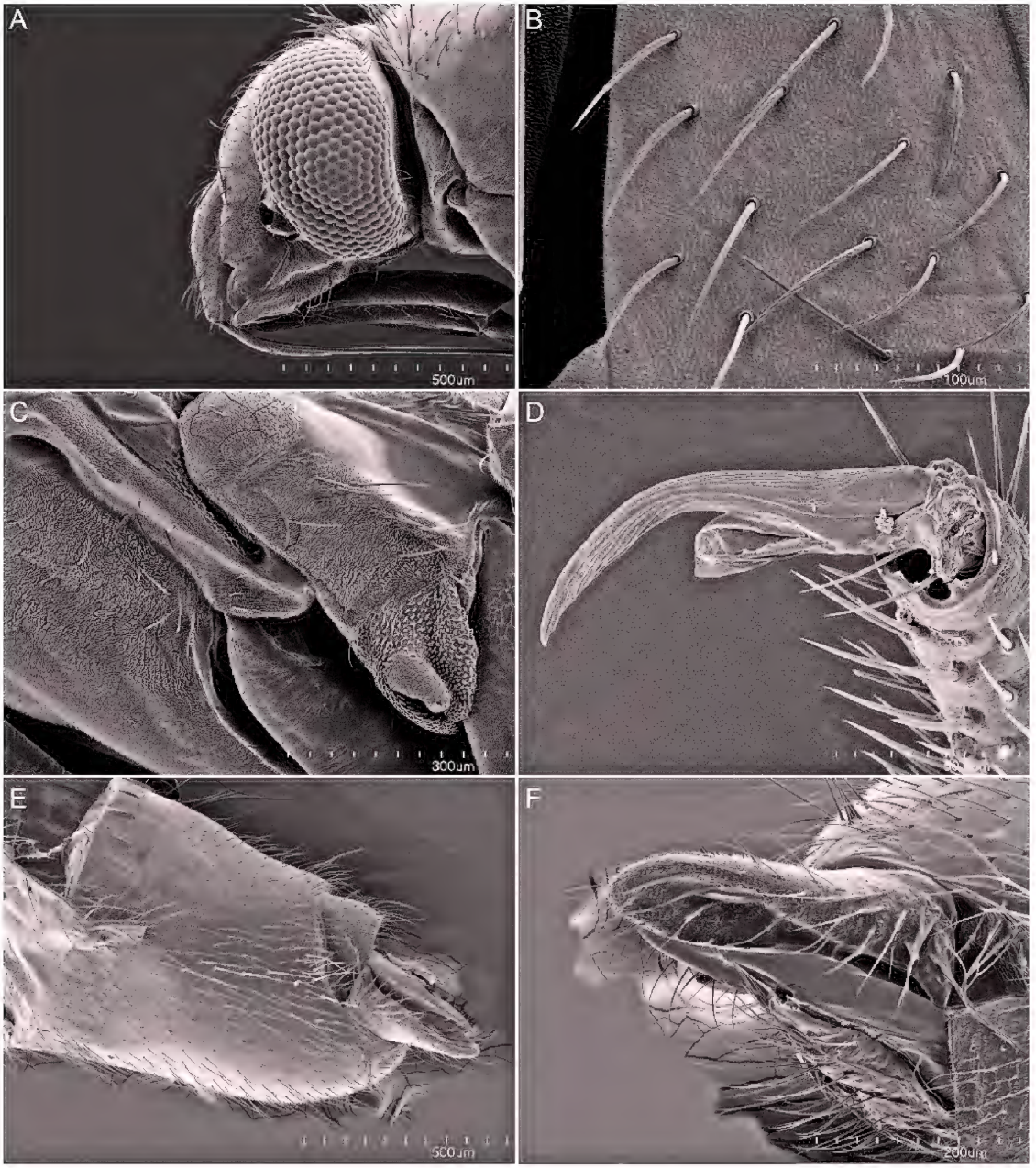


Fig. 47. *Wallabicoris waitzii*, male, scanning electron micrographs. **A.** Head in lateral view. **B.** Setae on corium adjacent to claval suture. **C.** Mesothoracic spiracle and metathoracic scent-efferent system. **D.** Pretarsus in medial view. **E.** Pygophore in lateral view. **F.** Detail of left paramere and apex of pygophore, dorsal view (AMNH_PBI 00136324).

endosoma. **Phallotheca:** More or less right angulate, dorsal surface without a hump; dorsal surface with a conspicuous keel. **Left Paramere:** Body elongate, somewhat exceeding pygophore margin; in dorsal perspective closed over about three-fourths length; body tapered toward apex in lateral perspective; anterior process arising at posterior margin of shaft; anterior process angled posterodorsally; posterior process appearing tubular,

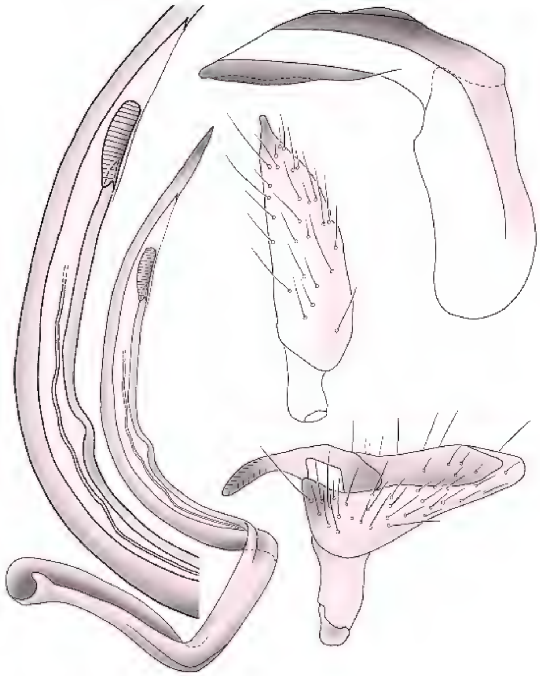


Fig. 48. *Wallabicoris waitzii*, male genitalia (AMNH_PBI 00194143).

fingerlike; posterior process with strongly projecting shoulder at base; base of posterior process at about level of paramere body or very weakly elevated. **Right Paramere:** Body elongate and slender, ratio lrp/wrp 4.12; body tapered from base to apex; posterior margin without distinct protuberance subapically; body elevated at juncture with base; apex with short fingerlike process.

ETYMOLOGY: Named for the host genus, *Waitzia* Wendl. (Asteraceae: Gnaphalieae).

HOSTS: Recorded only from *Waitzia acuminata* var. *acuminata* Steetz (Asteraceae) (pl. 7D, E).

DISTRIBUTION (map 3): Known only from Frank Hann National Park, Lilian Stoke Rock, southern Western Australia.

DISCUSSION: The actual distribution of *Waitzia acuminata* includes much of the drier areas of interior Australia south of about 22° south latitude. The known occurrence of *W. waitzii* at a single site may be an artifact of sampling, but only further collecting on annual composites will provide the answer to this question.

HOLOTYPE: **AUSTRALIA: Western Australia:** Lillian Stoke Rock, 33.06784°S 120.0964°E, 400 m, 21 Nov 1999, R.T. Schuh and G. Cassis, *Waitzia acuminata* var. *acuminata* Steetz (Asteraceae), det. PERTH staff PERTH 05670101, 1♂ (AMNH_PBI 00088680) (WAMP).

PARATYPES: **AUSTRALIA: Western Australia:** Frank Hann National Park, Lillian Stoke Rock, 33.06773°S 120.0971°E, 400 m, 05 Nov 1996, Schuh and Cassis, *Waitzia acuminata var. acuminata* Steetz (Asteraceae), det. PERTH staff PERTH 05236819, 64♂ (00087154–00087155, 00087443, 00087559, 00088503–00088548, 00088583, 00088657–00088669), 48♀ (00088584–00088592, 00088651–00088652, 00089993–00090025, 00090039–00090042) (AM), 93♂ (00130397, 00131970–00131988, 00136252, 00136287–00136299, 00136300–00136318–00136330, 00172786–00172808, 00194143–00194147) 86♀ (00130398–00130401, 00131990–00132012, 00136332–00136360, 00172749–00172753–00172778) (AMNH), 4♂ (00088631–00088634), 4♀ (00088575–00088578) (ANIC), 4♂ (00136279–00136282), 4♀ (00136400–00136403) (CNC), 20♂ (00088639–00088650, 00088797–00088800, 00089987–00089990), 16♀ (00088653–00088656, 00088670–00088674, 00088801–00088807) (UNSW), 4♂ (00088635–00088638), 4♀ (00088579–00088582) (USNM), 53♂ (00088604–00088630, 00136253–00136278), 65♀ (00088549–00088574, 00136361–00136399) (WAMP), 4♂ (00136283–00136286), 4♀ (00136404–00136407) (ZISP). Lillian Stoke Rock, 33.06784°S 120.0964°E, 400 m, 21 Nov 1999, R.T. Schuh and G. Cassis, *Waitzia acuminata acuminata* Steetz (Asteraceae), det. PERTH staff PERTH 05670101, 32♂ (00088676–00088679, 00088681, 00088683–00088688, 00088796, 00089936–00089955), 79♀ (00088689–00088705, 00088707–00088712, 00088740–00088795) (AM), 9♂ (00088682, 00172809–00172816), 8♀ (00088706, 00172779–00172785) (AMNH).

OTHER SPECIMENS EXAMINED: **AUSTRALIA: Western Australia:** Frank Hann National Park, Lillian Stoke Rock, 33.06773°S 120.0971°E, 400 m, 05 Nov 1996, Schuh and Cassis, *Waitzia acuminata* var. *acuminata* Steetz (Asteraceae), det. PERTH staff PERTH 05236819, 12 nymphs (00088593–00088603, 00089991) (AM), 2 nymphs (00131989, 00136331) (AMNH). Lillian Stoke Rock, 33.06784°S 120.0964°E, 400 m, 21 Nov 1999, R.T. Schuh and G. Cassis, *Waitzia*

TABLE 2
Matrix of 53 morphological characters for 37 *Wallabicoris* spp. and seven outgroup taxa

	0 5 10 15 20 25 30 35 40 45 50
Leucophoropterini sp.	00010041234303330-201230320200-02000000100000000000140
Hypseloecus sp.	0000-0012343022300224041320 11-0---2020010000000000120
Pilophorus discretus	-00-00002350-3330-22413231011-1---201100---0001000110
Tuxedo cruralis	10010040234403330-20213031010--02000100100000101000110
Plagiognathus chrysanthemi	21020001200304120100023120020200301000010000110100010
near Xiphoides "furvus"	2000-04113401010122022320020032110010001200011000013 0
near Xiphoides "pallidus"	11020000010000301220114110200321100100012000110000130
Wallabicoris baldersoni	01020001000000100221021021110101120010111011110111111
Wallabicoris cassisi	21020000000000110111013202100001110010120111111111111
Wallabicoris chrysocephali	02020001202101100221223121100101111010110001011010121
Wallabicoris commoni	01030010100000110221130020110101120010130011111110021
Wallabicoris coolabah	02030011204102100220023121110 1-11100101110011110120111
Wallabicoris craspedii	01030011204202320110012121110201120010120101110111101
Wallabicoris cuneotinctus	24152231202101120011222010100311310101301010102201 21
Wallabicoris dicrastyli	21020001000000120121222220110101120010130112110100021
Wallabicoris ellae	14150020000100120111121011110201100011110111010220121
Wallabicoris gingera	01020001204202320110021021100211111011120101111011111
Wallabicoris halganii	13340021111102120011123121110101111010132001111120111
Wallabicoris helichrysii	11030000101000120221431221100111120010122010111221121
Wallabicoris lachnostachyos	31020000000000110121114201100121110010130102111101101
Wallabicoris maralinga	12030010202010100221031021100221120011121011111020111
Wallabicoris newcastelii	21020001100012120121214111100111120011130112110100021
Wallabicoris norsemanius	02030001204000120211121021100121110011131002111120111
Wallabicoris olearii	11020000000010110221322020100201120010132012101001101
Wallabicoris ozothamni	11030000100000110-21221021100121120010120101110000111
Wallabicoris paradicrastyli	31030001100000110121214210100121111010111011111220121
Wallabicoris pimelei	21030001102101120111213000100221100010110001111110011
Wallabicoris pinocchii	01020000000000100200131020100311120011121211011220111
Wallabicoris pityrodiellus	11040020201000120121123021110111120010130211111111111
Wallabicoris pityrodii	11030011201101120111022110100101100011131022110110111
Wallabicoris pomaderri	22030011101101110221422020100221 0-00101221011101211 11
Wallabicoris prostantheri	01020000001101100211223121100221111011122101010121021
Wallabicoris pultenaei	22051331121101120111014211100121131010111011111110101
Wallabicoris rhamnicola	24152331200000120101212120100111 0-10101100001101101 11
Wallabicoris rutidosi	12030010100010100221121021100111140011120001111010111
Wallabicoris sandstonensis	12030011202101100220013120110211120010132001110110011
Wallabicoris schwartzi	01020000100101110221221020100211120011122011111101111
Wallabicoris spyridiellus	24152221200000120111323100100211131011130201010220011
Wallabicoris spyridii	24251201203101120111213110100221 0-10101110011101201 11
Wallabicoris tasmanensis	12030001201101120100223121100211020011132002111101111
Wallabicoris thomasii	24152331103101220011124200100221131010131111110220011
Wallabicoris trymalii	24152331200000120101313001100211130010120201010120121
Wallabicoris uptoni	02030011204101300220021121100101120011122002111120111
Wallabicoris waitzii	02020001102101100220031021100211010011122101111210111

acuminata acuminata Steetz (Asteraceae), det. PERTH staff PERTH 05670101, 1 nymph (00088739) (AM).

PHYLOGENETIC ANALYSES

In order to test the monophyly of the group and to evaluate host and biogeographical relationships, we performed a phylogenetic analysis for *Wallabicoris*. Thirty-seven *Wallabicoris* spp. and seven outgroup taxa were coded for 53 morphological characters. Two of the outgroup taxa, species from southern Australia related to the New Zealand genus *Xiphoides*, are being described by Weirauch and Schuh (in press). The morphological character matrix is shown in table 2. States for the morphometric characters were determined by the identification of breaks in the ratio ranges. Character descriptions are given in table 3.

In an effort to produce a more robust character set for the group, we also sequenced ~470 bases of 16S mtDNA for 25 taxa. Total genomic DNA was extracted from dried specimens using QIAGEN products. The large mitochondrial ribosomal subunit (16S rRNA) was amplified using the Illustra PuRe Taq Ready-to-Go PCR Beads. The primer pairs: 16S F CGC CTG TTT ATC AAA AAC AT and 16S R CTC CGG TTT GAA CTC AGA TCA are from Colgan et al. (1998). The annealing temperature of the PCR conditions was 48°C. The PCR purification and cycle-sequencing were carried out with a Biomek NX Laboratory Automation Workstation and using the Gencourt® AMPure® and CleanSEQ® systems. The reactions were sequenced using an automated Applied Biosystem 3730 DNA analyzer and the sequences were edited with Sequencher 4.8 (Gene Codes Corporation). The specimen voucher numbers and GenBank accession numbers for the 16S sequence data are given in table 4.

Molecular and total evidence analyses were performed under the parsimony criterion using direct optimization (Wheeler, 1996), as implemented in the program POY 4.1.1 (Varón et al., 2010), to calculate dynamic homologies. The search strategy used in POY 4 is as follows, in sequential order: 1000 random addition sequences, SPR+TBR keeping one tree per search, select all. All characters were equally weighted, with gap opening 0. To assess nodal support, jackknife values were calculated in POY 4 using 1000 replicates, 1 random taxon entry, SPR+TBR, and saving 10 trees per replicate.

Analyzing the molecular data alone for the 25 species of *Wallabicoris* and seven outgroups under the criteria specified above resulted in a single most parsimonious tree, 697 steps long (fig. 49). Combined analysis of 25 species of *Wallabicoris* with corresponding molecular and morphological data produced two most parsimonious trees (L = 1117); strict consensus tree shown in figure 50. A second total-evidence analysis including all 37 *Wallabicoris* spp, resulted in a single most parsimonious tree, 1223 steps long (fig. 51).

All three analyses recognize a monophyletic *Wallabicoris*, with the new genus near *Xiphoides* as its sister group, this result being recovered with 98% or greater jackknife values in each analysis. In addition to a monophyletic *Wallabicoris*, several additional clades were recovered in most analyses. These, identified by numbered nodes on figures 49–51, include:

1. The *dicrastyli* clade. This clade, comprising 5 species, is supported by characters 22-1 and 42-1 (fig. 51, clade 1), with a low to moderate jackknife value of 45%–73%. In the molecular only analysis *W. cassisi* is excluded from the *dicrastyli* clade and placed instead within the *cuneotinctus* clade.
2. The *cuneotinctus* clade. This clade comprises 7 species (fig. 51, node 2), with a jackknife value of 56%; a subset of six of those species, is supported by characters 1-4, 3-5, 5-2, 8-2, 34-1, and 48-2 with a jackknife value of 63%.
3. The *ozothamni* clade: This large clade, including the *ellae* and *rutidosi* clades mentioned below, is of less consistent composition and topology across all analyses, but shows very little commingling with species from the two clades discussed above.
4. The *ellae* clade: The species pair *W. ellae* + *W. pinocchii* is recovered in all analyses and it is supported by morphological characters 37-1, 44-0, 47-2, and 48-2 (fig. 51, clade 4), with a jackknife value of 54%. Although in the total evidence analyses (figs. 50, 51) the *ellae* clade is included within the *ozothmni* group, this

TABLE 3
Description of morphological characters for *Wallabicoris* spp. and outgroup taxa

COLORATION

0. **Body shape**: greatly elongate, parallel sided (l/w = 3.436–3.961) = 0; moderately elongate, parallel sided (l/w = 3.115–3.391) = 1; weakly elongate, weakly ovoid (l/w = 2.865–3.091) = 2; weakly to distinctly ovoid (l/w = 2.727–2.746) = 3.
1. **Coloration of pronotum**: unicolorous, deep red to black = 0; unicolorous pale = 1; unicolorous [yellow, brown, or green] = 2; pale with brown spots = 3; pale with red or carmine botches = 4.
2. **Coloration of scutellum**: unicolorous with remainder of dorsum = 0; with some red or carmine spots or blotches on pale background = 1; entirely red = 2; pale with some brown spots = 3.
3. **Coloration of hemelytron**: unicolorous, deep red to black = 0; castaneous to black with contrasting white markings = 1; unicolorous [pale, white, or yellow] = 2; mostly pale, or yellow, endocorium with dirty or golden areas = 3; unicolorous pale with small brown spots = 4; with red or carmine spots, botches, or solid areas = 5.
4. **Red fascia on corium**: absent = 0; present on endocorium just anterior to cuneal fracture = 1; present on exo- and endocorium just anterior to cuneal fracture = 2.
5. **Red markings on clavus**: absent = 0; present as spots only = 1; present as some spots and a solid area at level apex scutellum = 2; solid over most of area = 3.
6. **Markings on cuneus**: absent = 0; present as partial or complete but weak infuscation = 1; present as individual or coalesced red or brown spots = 2; pale basally, solid orange or red over most of remaining area = 3; present as a contrasting white basal fascia = 4.
7. **Coloration of membrane base**: with most of extreme base unicolorous with remainder = 0; with elongate, contrasting, fumose marking at extreme base = 1.
8. **Coloration of membrane**: unicolorous pale = 0; partially fumose = 1; weakly to strongly fumose over entire area = 2.
9. **Coloration of membrane veins**: white = 0; yellow = 1; red = 2; dark = 3.
10. **Coloration of venter**: unicolorous pale or mostly so = 0; light green = 1; light yellow = 2; heavily red laterally = 3; heavily infuscate, at least on mesopleuron and abdomen = 4; with thorax pale and abdomen dark = 5.
11. **Coloration of antennal segment 1**: unicolorous pale = 0; yellow to dirty yellow = 1; dirty yellow, with strong infuscation at base and apex = 2; pale with a dark base = 3; black = 4.
12. **Antennal segment 1 coloration of medial seta**: with one or two black medial setae = 0; with pale medial seta = 1.
13. **Coloration of antennal segment 2**: unicolorous pale = 0; yellow to dirty yellow = 1; dirty yellow proximally, weakly to heavily infuscate distally = 2; black or castaneous = 3; black at extreme base, remainder pale = 4.
14. **Coloration of labium:** pale with segment 4 heavily infuscate = 1; unicolorous red = 2; generally infuscate, heavily so apically = 3.
15. **Coloration of hind femur**: unicolorous pale, without black spots = 0; with a few brown or black spots = 1; with many brown or black spots = 2; nearly unicolorous dark = 3.
16. **Coloration of hind tibial spines**: dark = 0; pale = 1.
17. **Coloration of bases of tibial spines**: with conspicuous dark spots at bases = 0; with very small dark bases = 1; without dark spots at bases = 2.

SURFACE AND VESTITURE

18. **Vestiture of dorsum** (1): with erect or suberect black setae = 0; with black setae intermixed with pale setae on hemelytra = 1; with reclining simple setae matching background coloration = 2.
19. **Vestiture of dorsum** (2): without sericeous or woolly setae = 0; with some sericeous or woolly setae = 1; present, lanceolate, and appressed, sometimes in rows = 2.

STRUCTURE

20. **Head structure**: elongate, projecting anteriorly, ratio wh/lh = 2.47–2.77 = 0; moderately projecting, ratio wh/lh = 3.00–3.335 = 1; somewhat projecting, ratio wh/lh = 3.44–3.92 = 2; weakly projecting, ratio wh/lh = 4.264–4.714 = 3; barely projecting, ratio wh/lh = 4.884–5.172 = 4.
21. **Position of antennal fossa**: with dorsal margin somewhat below ventral margin of eye = 0; with ventral margin of fossa at ventral margin of eye = 1; with ventral margin 1 diameter above ventral margin of eye = 2; with ventral margin 2 diameters above ventral margin of eye = 3.
22. **Interocular space**: large, ratio iod/wh = 0.321 = 0; moderately large, ratio iod/wh = 0.358–0.416 = 1; moderate, ratio iod/wh = 0.424–0.457 = 2; relatively small, ratio iod/wh = 0.476–0.509 = 3; small, ratio iod/wh = 0.52–0.56 = 4.
23. **Eyes**: occupying entire height of head in lateral view (hg0–1/he20) = 0; leaving gena moderately exposed in lateral view (hg3/he20) = 1; leaving gena broadly exposed in lateral view (hg5–14/he20) = 2.
24. **Labial length**: very long, reaching well onto pygophore = 0; reaching from abdominal midpoint to margin of pygophore = 1; just reaching onto abdomen up to midpoint = 2; reaching between fore- and middle trochanters = 3.

TABLE 3.
(Continued)

MALE GENITALIA

25. **Base of endosoma length**: base very long = 0; base moderately long = 1; base short = 2.
26. **Base of endosoma shape**: weakly curving = 0; with a tight U-shaped bend = 1; forming a single complete coil = 2.
27. **Distal half of endosomal shaft**: smoothly curving = 0; more or less straight and erect = 1; sinuous = 2.
28. **Straps of endosoma**: with two straps = 0; with a single unified strap, U-shaped in cross section = 1.
29. **Primary endosomal strap**: short, ratio length apex strap/length sec gono 1.40–1.50 = 0; weakly elongate, ratio length apex strap/length sec gono 1.67–2.00 = 1; elongate, ratio length apex strap/length sec gono 2.15–2.83 = 2; greatly elongate, ratio length apex strap/length sec gono 3.00–5.5 = 3.
30. **Apex of primary endosomal strap**: nearly straight = 0; weakly arcuate = 1; distinctly curving = 2.
31. **Secondary endosomal strap width**: broad, about equal in width to primary strap = 0; very slender, of uniform width from endosomal bend to gonopore = 1.
32. **Secondary endosomal strap extent**: reaching midway to gonopore from major bend in endosoma = 0; reaching to level of secondary gonopore = 1; reaching just beyond secondary gonopore as fingerlike extension = 2; reaching well beyond gonopore as bladelike extension = 3.
33. **Secondary endosomal strap curvature**: smoothly curving over entire length = 0; with a short submedial undulation = 1; with a broad submedial undulation = 2; bifurcating at about midpoint = 3; broken at about midpoint = 4.
34. **Secondary gonopore orientation**: seen laterally in lateral view of endosoma = 0; seen frontally in lateral view of endosoma = 1; unsclerotized, orientation unclear = 2.
35. **Fingerlike protuberance at distal margin of secondary gonopore**: absent = 0; present = 1.
36. **Phallotheca shape**: smoothly curving on dorsal margin = 0; more or less right angulate = 1; nearly erect = 2.
37. **Dorsal surface of phallotheca**: without a conspicuous keel = 0; with a conspicuous keel = 1.
38. **Posterior surface of phallotheca**: lacking transparent window = 0; with conspicuous transparent window = 1.
39. **Left paramere shape**: body flattened, processes facing in opposite directions = 0; body relatively short, just exceeding margin of pygophore = 1; body elongate, somewhat exceeding pygophore margin = 2; body very elongate, greatly exceeding margin of pygophore = 3.
40. **Left paramere in dorsal perspective**: open over nearly entire length = 0; closed over about one-half length = 1; closed over about three-fourths length = 2.
41. **Left paramere body**: not distinctly tapering toward apex = 0; tapered toward apex in lateral perspective = 1; tapered toward apex, apex elongate nipplelike = 2.
42. **Position of anterior process of left paramere**: arising at posterior margin of shaft = 0; arising slightly forward of posterior margin of shaft = 1; arising near middle of anterodorsal margin of paramere= 2.
43. **Direction of anterior process of left paramere**: directed posteriorly = 0; angled posterodorsally = 1; directed vertically = 2.
44. **Posterior process of left paramere**: flattened, broadest at angulate apex = 0; appearing tubular, fingerlike = 1.
45. **Posterior process shoulder of left paramere**: without strong shoulder at base = 0; with strongly projecting shoulder at base = 1.
46. **Base of posterior process of left paramere**: at least somewhat elevated above level of paramere body = 0; at about level of paramere body or very weakly elevated = 1.
47. **Right paramere length**: short and broad, ratio length/width 2.3–2.83 = 0; moderately elongate, ratio length/width 2.93–3.93 = 1; elongate and slender, ratio length/width 4.00–4.67 = 2.
48. **Right paramere body shape**: rounded laterally = 0; tapered from base to apex = 1; more or less parallel sided = 2.
49. **Right paramere posterior margin**: without distinct protuberance subapically = 0; with a distinct protuberance subapically = 1.
50. **Right paramere body elevation**: more or less confluent with base = 0; elevated at juncture with base = 1.
51. **Right paramere apex**: tapered = 0; with short fingerlike process = 1; with a weakly elongate fingerlike process = 2; with a very long fingerlike process = 3; blunt = 4.

FEMALE GENITALIA

52. **Posterior wall**: simple = 0; with strongly elevated longitudinal folding = 1.

TABLE 4
AMNH voucher and NCBI GenBank acession numbers for 16S mtDNA sequences

Taxon	AMNH voucher	GenBank Accession
Hypseloecus sp. (Australia)	AMNH_PBI 0023220	AY252897
Pilophorus discretus Van Duzee	AMNH_PBI 00024105	AY252838
Leucophoropterini sp. (Australia)	AMNH_PBI 00023260	HM142166
Tuxedo cruralis (Van Duzee)	NA	AY252823
Plagiognathus chrysanthemi	AMNH_PBI 00023224	AY252709
near *Xiphoides* "furvus" (Australia)	AMNH_PBI 00131244	HM217005
near *Xiphoides* "pallidus" (Australia)	AMNH_PBI 00131056	HM142165
Wallabicoris cassisi	AMNH_PBI 00133142	HM142141
Wallabicoris chrysocephali	AMNH_PBI 00098811	HM142149
Wallabicoris cuneotinctus	AMNH_PBI 00194224	HM142150
Wallabicoris dicrastyli	AMNH_PBI 00135721	HM142151
Wallabicoris ellae	AMNH_PBI 00133297	HM142152
Wallabicoris halganii	AMNH_PBI 00136998	HM142153
Wallabicoris helichrysii	AMNH_PBI 00089256	HM142154
Wallabicoris lachnostachyos	AMNH_PBI 00136125	HM142155
Wallabicoris newcastelii	AMNH_PBI 00090083	HM142143
Wallabicoris ozothamni	AMNH_PBI 00090450	HM142144
Wallabicoris paradicrastyli	AMNH_PBI 00097948	HM142146
Wallabicoris pimelei	AMNH_PBI 00194159	HM142148
Wallabicoris pinocchii	AMNH_PBI 00090539	HM142147
Wallabicoris pityrodii	AMNH_PBI 00136974	HM142156
Wallabicoris pityrodiellus	AMNH_PBI 00302770	HM142145
Wallabicoris prostantheri	AMNH_PBI 00090063	HM142157
Wallabicoris pultenaei	AMNH_PBI 00089440	HM142158
Wallabicoris rhamnicola	AMNH_PBI 00172658	HM142159
Wallabicoris rudidosi	AMNH_PBI 00097284	HM142160
Wallabicoris sandstonensis	AMNH_PBI 00090049	HM142161
Wallabicoris schwartzi	AMNH_PBI 00102026	HM142162
Wallabicoris spyridiellus	AMNH_PBI 00087906	HM142163
Wallabicoris tasmanensis	AMNH_PBI 00194082	HM142164
Wallabicoris thomasii	AMNH_PBI 00128570	HM142142
Wallabicoris waitzii	AMNH_PBI 00088703	HM217004

association is not recovered in absence of morphological data (Fig. 49).

5. The *rutidosi* clade: The species pair *W. rutidosi* + *W. helichrysi* is recovered in all analyses (also including *W. maralinga* in the 37-taxon analysis; fig. 51, node 5), with jackknife values near 100% in the 25-taxon analyses (figs. 42, 50).

We base the remainder of our discussion on figure 51, the total-evidence analysis of all 37 *Wallabicoris* spp.

HOST-PLANT ASSOCIATIONS

The evolution of host-plant associations in *Wallabicoris* offers a tantalizing subject for exploration. The known host associations of *Wallabicoris* spp. are listed in the specimens-examined sections of the taxonomic treatments and are summarized for each species under the heading Hosts. Table 5 offers an alternative view of host associations, listing known hosts by family, genus and species, their associated bug predators, and the number of collecting events per bug species, and the number of bug specimens collected. The records for the plant families Rutaceae, Scrophularaceae, Loranthaceae, and Lauraceae, and for *W. spyridii* in association with *Eutaxia microphylla* J. Black represent apparent commingling of specimens in the field rather than actual host records; they involve singular collecting events and miniscule

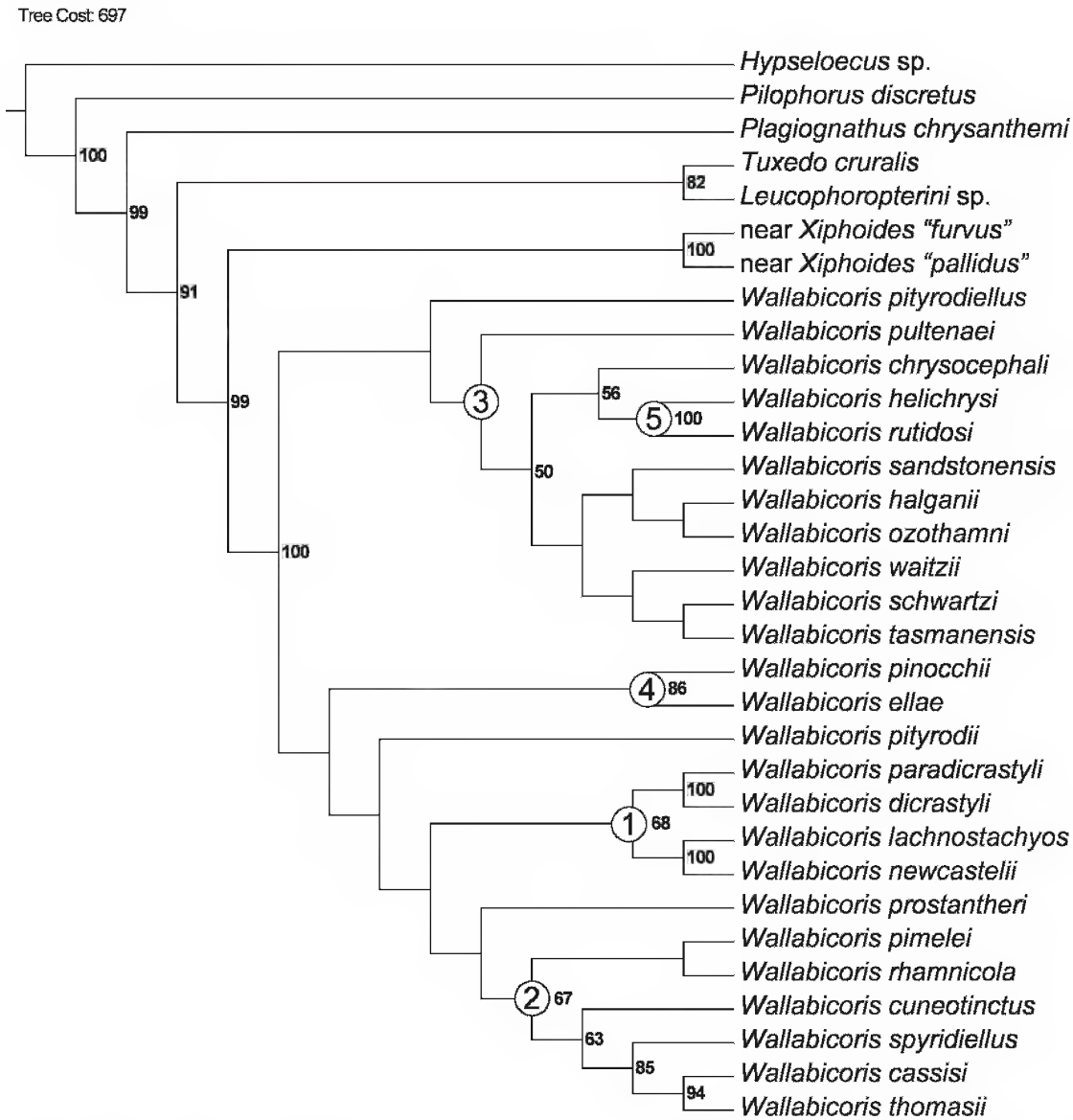


Fig. 49. Relationships of 25 *Wallabicoris* spp. and seven outgroups based on analysis of 16S mDNA data using POY 4 with a 1:1:1:1:0 cost ratio (morphological change:transitions:transversions:gap extension:gap opening). Single tree of cost 697. Jackknife values above 50% shown.

numbers of insect specimens. Thus, they are discarded from the analysis.

As pointed out in the introduction to this paper, the host associations of *Wallabicoris* are far from random, but rather appear to be restricted to just seven recognized plant families: Asteraceae, Boraginaceae, Fabaceae, Lamiaceae, Rhamnaceae, Sterculiaceae, and Thymeleaceae. The Sterculiaceae genera on which *Wallabicoris* spp. have been collected (table 5) are placed within Malvaceae by the Angiosperm Phylogeny Group (Stevens, 2001). Host associations can be appreciated by examination of figure 52 where

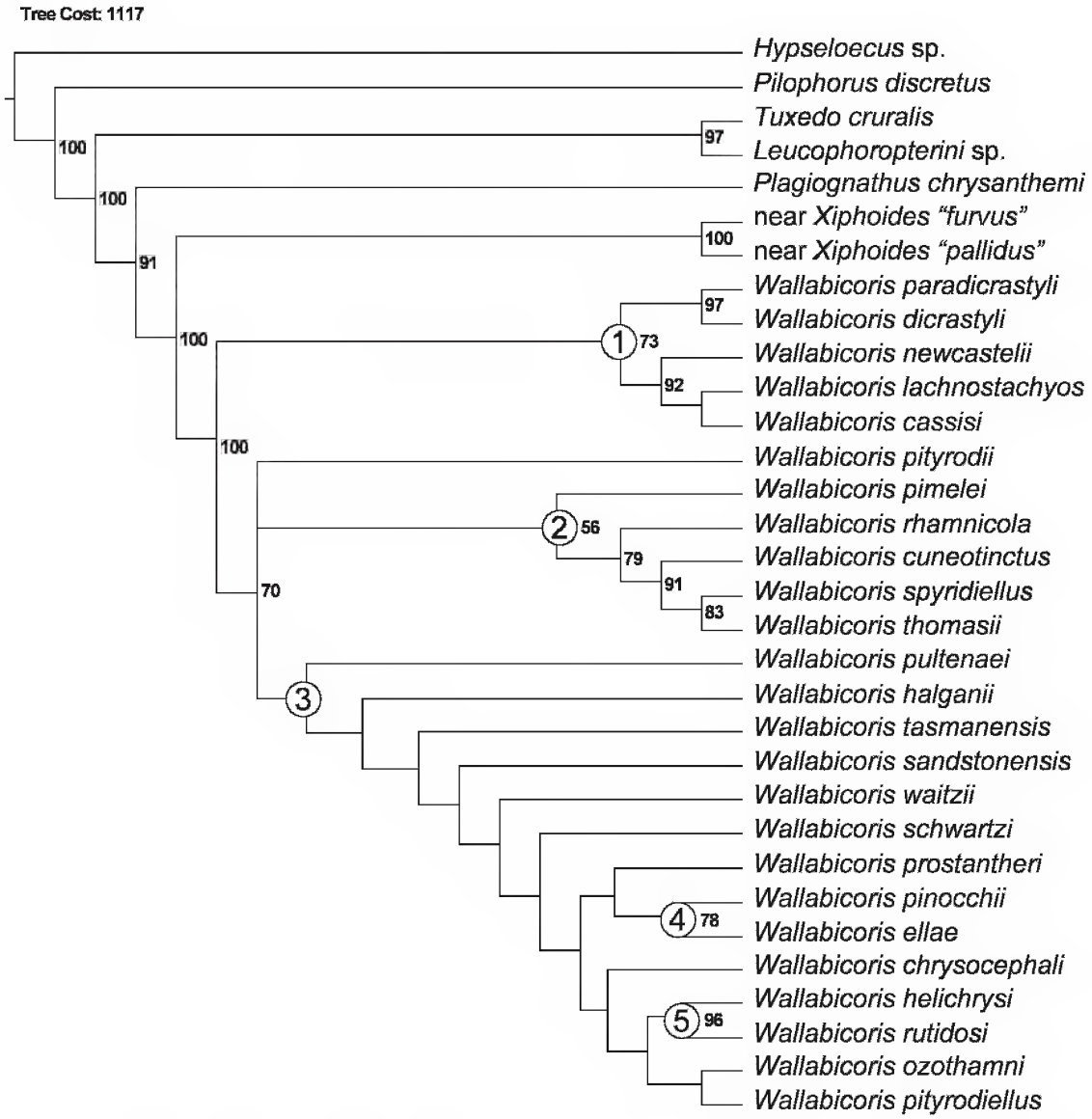


Fig. 50. Relationships of 25 *Wallabicoris* spp. and seven outgroups based on analysis of 16S mDNA data and 53 morphological characters using POY 4 with a 1:1:1:1:0 cost ratio, (morphological change:transitions:transversions:gap extension:gap opening). Consensus of two trees of cost 1117). Jackknife values above 50% shown.

host-plant families are plotted on the results of the total-evidence analysis of all 37 *Wallabicoris* spp.

The nonrandom nature of host associations and restricted nature of diversification in *Wallabicoris* receives substantial support from our phylogenetic analyses, as can be seen in figure 52 and from the following discussion.

Although spread across seven eudicot families, all the known hosts of *Wallabicoris* belong to two major clades, the Asterids (Asteraceae, Lamiaceae, and Boraginaceae) and Rosids (Rhamnaceae, Thymelaceae, Fabaceae, and Sterculiaceae). Iridoids are cyclopentanoid monoterpenes highly correlated with asterids, although not exclusively so (Albach et al., 2001). These compounds

have been implicated in herbivore preferences, detering some and attracting others. The evolution of iridoid compounds may, therefore, have had a selective advantage for the plants able to synthesize them; likewise, the same may be inferred from hervibores that feed from these plants despite the iridoids. Iridoids have a bitter taste and cause nausea in vertebrates, thus some herviborous insects sequester them to use in defense against predators (Bowers 1980, 1988). However, among the asterids that are hosts of *Wallabicoris*, only those in the Lamiaceae have iridoids, as the compound is lacking in Asteraceae and Boraginaceae.

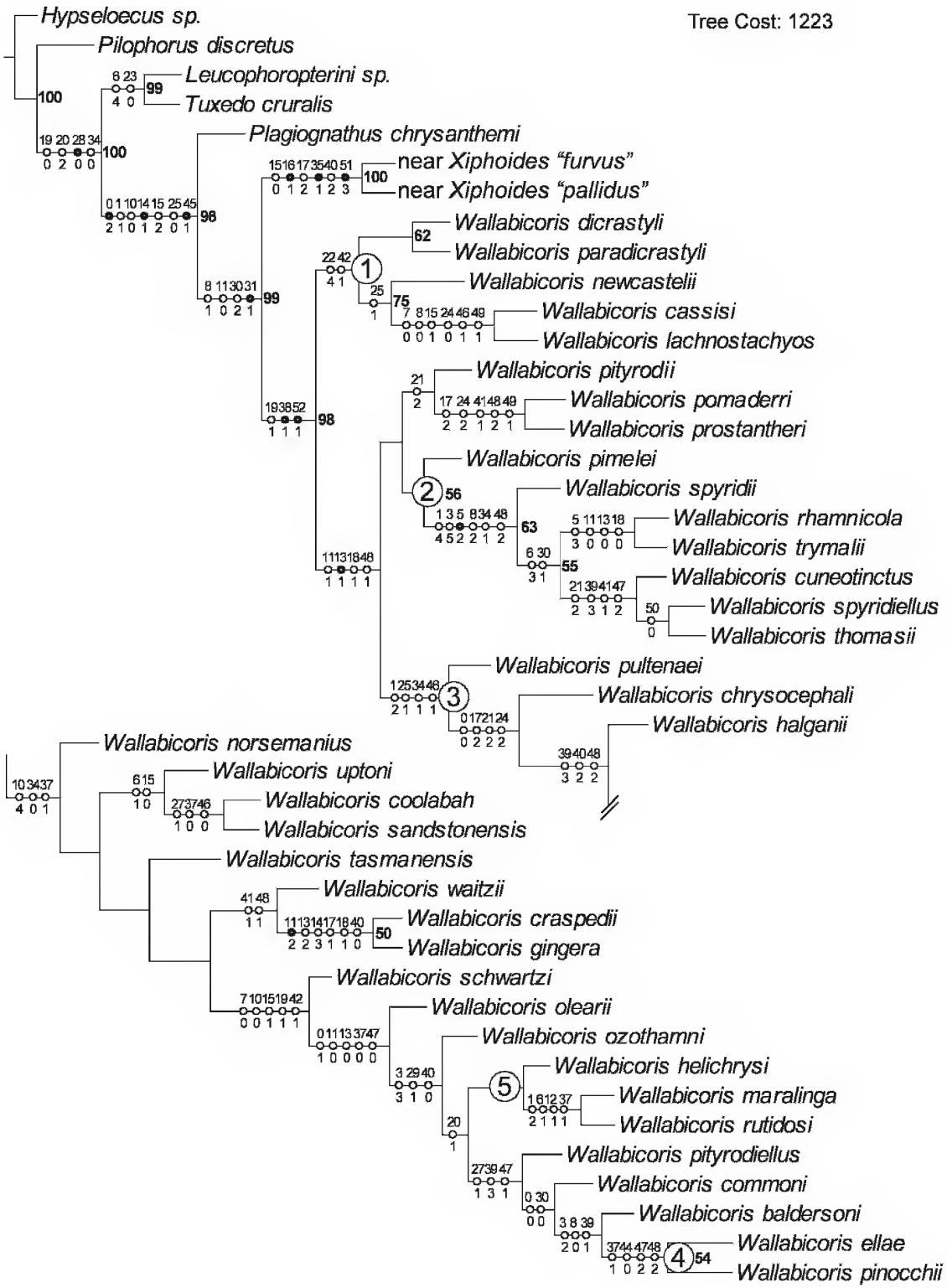
Rosids are a large and heterogeneous group. Although the monophyly of rosids was corroborated by recent molecular studies, no clear nonmolecular apomorphies unite the rosid clade (Angiosperm Phylogeny Group, 2003; Simpson, 2006). The rosid clade also contains novel biochemical pathways such as the machinery necessary for symbiosis with nitrogen-fixing bacteria (nitrogen-fixing clade) and defense mechanisms such as glucosinolate production (Brassicales) and cyanogenic glycosides (e.g., Fabaceae) (Solits et al., 2005).

The *dicrastyli* clade (fig. 52, clade 1) is restricted to members of Lamiaceae (6 genera) and the host genus *Dicrastylis* J. Drumm. ex Harv. is common to the entire clade (table 5). The clade is composed of *W. cassisi*, *W. dicrastyli*, *W. lachnostachyos*, *W. newcastelii*, and *W. paradicrastyli*; it is found primarily in Western Australia with a single widespread species, *W. paradicrastyli*, which also occurs in Central Australia (map 1). *Wallabicoris paradicrastyli* has three host species, but all in the genus *Dicrastylis*. Although more restricted in geographical distribution, *W. lachnostachyos* and *W. newcasteli* have hosts from two lamiaceaous genera, while *W. cassisii* was found breeding on three genera of Lamiaceae. These are not the only Lamiaceae feeders within *Wallabicoris*, the others being *W. pityrodii*, *W. pityrodiellus*, and *W. prostantheri*. These last three species, however, do not group in our cladistic analysis (figs. 49–51); thus, the preference for Lamiaceae probably evolved multiple times independently within *Wallabicoris*.

The *cuneotinctus* clade (fig. 52, clade 2) includes *W. pimelei*, *W. cuneotinctus*, *W. rhamnicola*, *W. spyridiellus*, *W. spyridii*, *W. thomasii*, and *W. trymalii*. All are restricted to the south coastal regions of western and eastern Australia (Map 2). They feed on members of Rhamnaceae, Sterculiaceae, and Thymeleaceae, all rosids. We did not have sequence data for *W. spyridii and W. trymalii*, but the morphological data strongly support the placement of these species within the group. Rhamnaceae as a host-plant family appears to have evolved independently on more than one occasion, as *W. pomaderri*, not included in the *cuneotinctus* clade (based on morphological data only), also feeds on the Rhamnaceae.

All species of *Wallabicoris* known to feed on the Asteraceae are in the remaining grouping that we refer to as the *ozothamni* clade (fig. 52, clade 3), which is broadly distributed in Australia (map 3). Not all species placed in this group feed on the Asteraceae and eight of the species have unknown host associations. Nonetheless, it is likely that all species with unknown host associations are Asteraceae feeders. In terms of Asteraceae host diversity, the number of genera is only slightly higher (7 genera) when compared with Lamiaceae, the most frequent host family of *Wallabicoris*. Six of those seven genera belong to the tribe Gnaphalieae, the only exception being *Olearia* Moench., which belongs to the Astereae. Exceptions to the rule of Asteraceae feeding in this clade are *W. halganii* (Boraginaceae), *W. pityrodiellus* (Lamiaceae), *W. ellae* (Sterculiaceae), and *W. pinocchii* (Thymeliaceae). The last species is the most widely distributed of all known species of *Wallabicoris*, occurring along the eastern and western coasts of Australia, but with no known collections in the center of the continent (map. 4); *Wallabicoris pinocchii* has four host spp. all of them within *Pimelea* Banks ex Gaertn. (table 5).

Further evidence for the nonrandom nature of host associations in *Wallabicoris* can be deduced from the very large faunas of phyline Miridae that we have collected from other plant taxa that show great diversity in Australia, but from which no specimens of *Wallabicoris* have ever been recovered. Notable among these are the families Casuar-


Tree Cost: 1223
Hypseloecus sp.
Pilophorus discretus
Leucophoropterini sp.
Tuxedo cruralis
Plagiognathus chrysanthemi
near Xiphoides "furvus"
near Xiphoides "pallidus"
Wallabicoris dicrastyli
Wallabicoris paradicrastyli
Wallabicoris newcastelii
Wallabicoris cassisi
Wallabicoris lachnostachyos
Wallabicoris pityrodii
Wallabicoris pomaderri
Wallabicoris prostantheri
Wallabicoris pimelei
Wallabicoris spyridii
Wallabicoris rhamnicola
Wallabicoris trymalii
Wallabicoris cuneotinctus
Wallabicoris spyridiellus
Wallabicoris thomasii
Wallabicoris pultenaei
Wallabicoris chrysocephali
Wallabicoris halganii
Wallabicoris norsemanius
Wallabicoris uptoni
Wallabicoris coolabah
Wallabicoris sandstonensis
Wallabicoris tasmanensis
Wallabicoris waitzii
Wallabicoris craspedii
Wallabicoris gingera
Wallabicoris schwartzi
Wallabicoris olearii
Wallabicoris ozothamni
Wallabicoris helichrysi
Wallabicoris maralinga
Wallabicoris rutidosi
Wallabicoris pityrodiellus
Wallabicoris commoni
Wallabicoris baldersoni
Wallabicoris ellae
Wallabicoris pinocchii

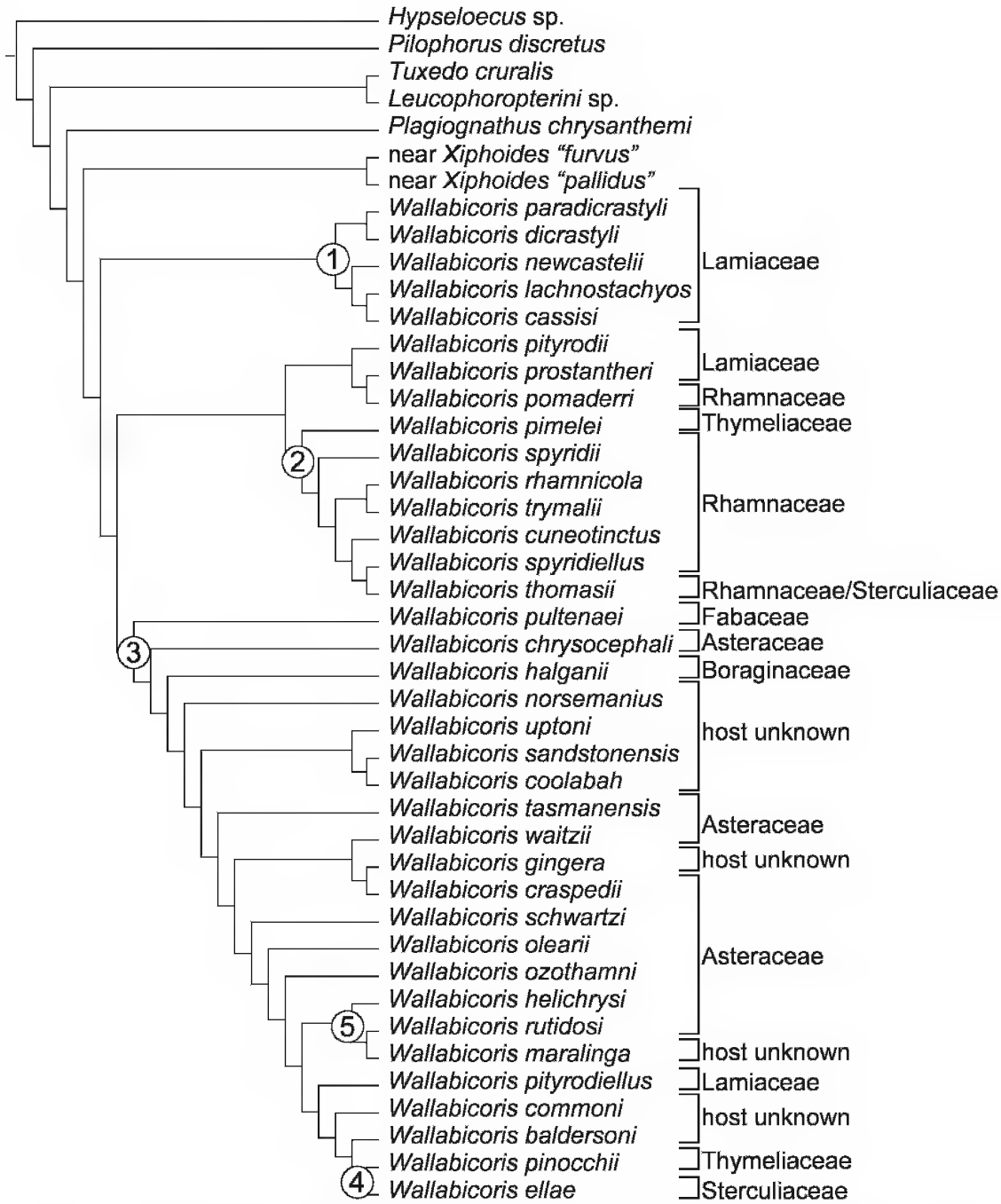


Fig. 52. Host associations of *Wallabicoris* spp. superimposed on phylogenetic relationships from figure 51.

←

Fig. 51. Relationships of 37 *Wallabicoris* spp. and seven outgroups based on analysis of 16S mDNA data and 53 morphological characters using POY 4 with a 1:1:1:1:0 cost ratio, (morphological change:transitions:transversions:gap extension:gap opening) Single tree of cost 1223. Jackknife values above 50% are shown.

TABLE 5
Host plants of *Wallabicoris*

Plant Family	Plant Species	*Wallabicoris* Species	Insect Specs.	Events	State	Status
Asteraceae	*Chrysocephalum apiculatum* Steetz	*W. chrysocephali*	5	1	NT	breeding
Asteraceae	*Chrysocephalum apiculatum/ semipapposum complex*	*W. chrysocephali*	24	1	NT	breeding
Asteraceae	*Craspedia* sp.	*W. craspedii*	3	1	NSW	breeding
Asteraceae	*Helichrysum* sp.	*W. helichrysi*	49	1	NSW	breeding
Asteraceae	*Olearia axillaris* (DC.) Benth.	*W. olearii*	5	1	WA	breeding
Asteraceae	*Ozothamnus argophyllus* (A. Cunn. ex DC) Anderb.	*W. schwartzi*	4	1	Tasmania	breeding
Asteraceae	*Ozothamnus diosmifolius* DC.	*W. ozothamni*	342	5	NSW	breeding
Asteraceae	*Ozothamnus ferrugineus* Labill. Sweet	*W. schwartzi*	29	2	Tasmania	breeding
Asteraceae	*Ozothamnus ferrugineus*	*W. tasmanensis*	27	1	Tasmania	breeding
Asteraceae	*Ozothamnus hookeri* Sond.	*W. tasmanensis*	54	2	Tasmania	breeding
Asteraceae	*Ozothamnus rosmarinifolius* DC.	*W. schwartzi*	77	1	Tasmania	breeding
Asteraceae	*Ozothamnus rosmarinifolius*	*W. tasmanensis*	1	1	Tasmania	breeding
Asteraceae	*Rutidosis helichrysoides* DC.	*W. rutidosi*	392	5	NT	breeding
Asteraceae	*Waitzia acuminata* var. *acuminata*	*W. waitzii*	130	1	WA	breeding
Asteraceae	*Waitzia acuminata* var. *acuminata*	*W. waitzii*	491	1	WA	breeding
Boraginaceae	*Halgania viscosa* S. Moore	*W. halganii*	28	1	WA	breeding
Fabaceae	*Eutaxia microphylla* J. Black	*W. spyridii*	3	1	SA	sitting/ mislabeled
Fabaceae	*Pultenaea tenuifolia* R. Br.	*W. pultenaei*	292	2	Victoria	breeding
Lamiaceae	*Cyanostegia angustifolia* Turcz.	*W. pityrodii*	43	1	WA	breeding
Lamiaceae	*Dicrastylis beveridgei* F. Muell.	*W. paradicrastyli*	14	1	NT	breeding
Lamiaceae	*Dicrastylis beveridgei var. beveridgei*	*W. paradicrastyli*	17	1	NT	breeding
Lamiaceae	*Dicrastylis flexuosa* (W.R. Price) C.A. Gardner	*W. dicrastyli*	185	1	WA	breeding
Lamiaceae	*Dicrastylis fulva* fo. *fulva*	*W. cassisi*	5	1	WA	breeding
Lamiaceae	*Dicrastylis fulva* fo. *fulva*	*W. lachnostachyos*	8	1	WA	breeding
Lamiaceae	*Dicrastylis fulva* fo. *fulva*	*W. newcastelii*	75	1	WA	breeding
Lamiaceae	*Dicrastylis gilesii* var. *gilesii*	*W. paradicrastyli*	13	2	NT	breeding
Lamiaceae	*Dicrastylis morrisonii* Munir	*W. paradicrastyli*	9	1	WA	breeding
Lamiaceae	*Dicrastylis parvifolia* F. Muell.	*W. newcastelii*	9	1	WA	breeding
Lamiaceae	*Lachnostachys coolgardiensis* S. Moore	*W. cassisi*	1	1	WA	breeding
Lamiaceae	*Lachnostachys coolgardiensis*	*W. lachnostachyos*	5	1	WA	breeding
Lamiaceae	*Lachnostachys eriobotrya* (F. Muell.) Druce	*W. lachnostachyos*	297	3	WA	breeding
Lamiaceae	*Lachnostachys eriobotrya*	*W. lachnostachyos*	29	1	WA	breeding
Lamiaceae	*Newcastelia insignis* E. Pritz.	*W. cassisi*	104	1	WA	breeding
Lamiaceae	*Newcastelia insignis*	*W. newcastelii*	76	1	WA	breeding
Lamiaceae	*Newcastelia insignis*	*W. pityrodii*	1	1	WA	breeding
Lamiaceae	*Newcastelia viscida* E. Pritz.	*W. newcastelii*	31	1	WA	breeding
Lamiaceae	*Pityrodia cuneata* (Gaudich.) Benth.	*W. pityrodiellus*	66	1	WA	breeding
Lamiaceae	*Pityrodia terminalis* A.S. George	*W. pityrodii*	353	3	WA	breeding
Lamiaceae	*Prostanthera campbellii* F. Muell.	*W. prostantheri*	18	1	WA	breeding
Lamiaceae	*Prostanthera* sp.	*W. pityrodiellus*	4	1	WA	breeding
Lauraceae	*Cassytha racemosa* Nees	*W. pinocchii*	48	1	WA	mislabeled
Loranthaceae	*Amyema preissii* Tiegh.	*W. rutidosi*	2	1	NT	sitting/ mislabeled
Myrtaceae	*Calytrix tetragona* Labill.	*W. spyridii*	1	1	SA	sitting/ mislabeled
Rhamnaceae	*Pomaderris apetala* Labill.	*W. cuneotinctus*	6	1	Tasmania	breeding

TABLE 5
(Continued)

Plant Family	Plant Species	*Wallabicoris* Species	Insect Specs.	Events	State	Status
Rhamnaceae	*Pomaderris oraria* subsp. *calcicola*	*W. pomaderri*	26	1	Victoria	breeding
Rhamnaceae	*Pomaderris oraria* subsp. *oraria*	*W. cuneotinctus*	46	1	Victoria	breeding
Rhamnaceae	*Spyridium globulosum* Benth.	*W. spyridiellus*	98	4	WA	breeding
Rhamnaceae	*Spyridium globulosum*	*W. thomasii*	2	1	WA	breeding
Rhamnaceae	*Spyridium* sp.	*W. spyridii*	221	1	SA	breeding
Rhamnaceae	*Spyridium vexilliferum* (Hook.) Reissek	*W. rhamnicola*	67	1	Victoria	breeding
Rhamnaceae	*Spyridium vexilliferum*	*W. spyridii*	1	1	Victoria	breeding
Rhamnaceae	*Trymalium odoratissimum Lindl.* (= *T. floribundum* Steud. fo. *fulva*)	*W. trymalii*	4	1	WA	breeding
Rhamnaceae	*Trymalium odoratissimum Lindl.* (= *T. floribundum* Steud. subsp. *trifidum*)	*W. trymalii*	5	1	WA	breeding
Rutaceae	*Chorilaena quercifolia* Endl.	*W. thomasii*	4	1	WA	sitting/ mislabeled
Scrophulariaceae	*Eremophila gilesii* F. Muell.	*W. rutidosi*	1	1	NT	sitting/ mislabeled
Sterculiaceae	*Keraudrenia integrifolia* Hook.	*W. ellae*	108	2	WA	breeding
Sterculiaceae	*Lasiopetalum floribundum*	*W. thomasii*	21	2	WA	breeding
Sterculiaceae	*Thomasia* ms name *heterophylla*	*W. thomasii*	38	1	WA	breeding
Thymelaeaceae	*Pimelea glauca* R. Br.	*W. pinocchii*	1	1	NSW	breeding
Thymelaeaceae	*Pimelea linifolia* subsp. *collina*	*W. pinocchii*	18	1	NSW	breeding
Thymelaeaceae	*Pimelea longiflora* subsp. *longiflora*	*W. pinocchii*	91	1	WA	breeding
Thymelaeaceae	*Pimelea sericea* R. Br.	*W. pimelei*	25	1	Tasmania	breeding
Thymelaeaceae	*Pimelea* sp.	*W. pinocchii*	2	1	NSW	breeding
Thymelaeaceae	*Pimelea sylvestris* R. Br.	*W. pinocchii*	79	3	WA	breeding

State Abbreviations: New South Wales = NSW; Northern Territory = NT; South Australia = SA; Western Australia = WA.

inaceae, Fabaceae (Mimosoideae), Scrophulariaceae (= Myoporaceae), Myrtaceae, and Proteaceae.

DISTRIBUTIONAL PATTERNS

As currently known, most—although not all—*Wallabicoris* spp. show restricted patterns of distribution, many known from only a single collecting event or from a few geographically proximal localities.

We have plotted the distributions of *Wallabicoris* species on the basis of their host associations. These distributions can be seen in maps 1–4 (pp. 16–17). The Lamiaceae feeders are almost totally restricted to Western Australia, and more particularly to the Goldfields-Kalbarri region (map 1). Our phylogenetic analyses do not suggest that all Lamiaceae feeders belong to a monophyletic group, but the Lamiaceae-feeding *dicrastyli* group is nonetheless retrieved as monophyletic in most analyses.

The Rhamnaceae-feeding species, including all members of the *cuneotinctus* group, are restricted to the most southerly coastal regions of Australia, and show an amphicontinental pattern (map 2), with the greatest diversity in Western Australia. This type of disjunction and skewed level of diversity has been documented by Weirauch and Schuh (in press) and Schuh and Weirauch (submitted) in other genus-level groupings of phyline Miridae in Australia.

Species of *Wallabicoris* known to feed on the Asteraceae (map 3) show limited diversity in Western Australia. Even including some of those species that we predict to be Asteraceae feeders (*W. baldersoni*, *W. maralinga*, *W. norsemanius*, *W. sandstonensis*, *W. uptoni*), diversity in far southwestern Australia does not approach the diversity seen in the

Lamiaceae- and Rhamnaceae-feeding clades. Seen from a somewhat different perspective, diversity in the interior of Australia is skewed toward the Asteraceae-feeding species, with only *W. paradicrastyli* (of the *dicrastyli* clade) found in central Australia.

ACKNOWLEDGMENTS

We offer special thanks to Gerry Cassis, University of New South Wales, for his contribution to the existing collections of *Wallabicoris*. His efforts to organize funding, permits, and logistics, his knowledge of the Australian flora, and his tireless efforts in the field, are to a very great degree responsible for bringing together the material studied during the course of this project. Christiane Weirauch, University of California, Riverside, also deserves special recognition. During her three-year term as a PBI postdoctoral fellow she sorted large collections of Australian Phylinae, documented male genitalic structure across a very broad range of taxa, and first recognized the distinctive nature of the genitalia in *Wallabicoris* as here diagnosed; she also recognized as distinct several of the species described in this revision. Other persons whose contributions to this project require individual acknowledgment because of their direct bearing on its completion for publication include: Ella Massie-Schuh, who sorted and organized specimens, dissected male genitalia, and entered most of the specimen data in our initial efforts to recognize species within *Wallabicoris* and document the structure of the male genitalia; Christine A. Johnson, American Museum of Natural History (AMNH), who prepared the specimen measurements and analyzed those data, making a significant contribution to our efforts to prepare descriptions, diagnoses, and the identification key; Steve Thurston (AMNH), who prepared the habitus images, inked and digitized the genitalic illustrations, and assembled all the artwork in its final form; Katrina Menard, Ph.D. student, Texas A&M University, who, supported by NSF PBI funds, filled in some taxonomic gaps in the 16S sequences; Michael D. Schwartz, who prepared the maps; Matthew Frenkel of the AMNH Microscopy and Imaging Facility, who assisted with scanning electron microscopy; the collections staffs at the Western Australian Herbarium, Department of Conservation and Land Management, Perth, and the Royal Botanic Gardens, Sydney, who provided authoritative host identifications; and Ward Wheeler, chair, Division of Invertebrate Zoology, AMNH, who provided partial funding of the DNA sequencing as performed by the junior author.

This project represents a contribution to, and was partially supported by the National Science Foundation (NSF) Planetary Biodiversity Inventories (PBI) award (DEB-0316495) to Randall T. Schuh and Gerasimos Cassis for the study of the Miridae subfamilies Orthotylinae and Phylinae.

Funding for fieldwork was provided by the Australian Museum (New South Wales, 1995; Western Australia, 1996, 1997, 1999; Queensland, South Australia, 1998; Central Australia, 2001; Victoria 2002), the American Museum of Natural History (New South Wales, 1995; Western Australia, 1996, 1999; Queensland, South Australia, 1998; Central Australia, 2001), the Niarchos Foundation (Victoria, Tasmania, 2002), the National Geographic Society (Western Australia, 1997), and the NSF PBI award (Tasmania and Western Australia, 2004).

All material collected by R.T. Schuh, G. Cassis, and their collaborators was acquired under permits issued by Parks Victoria (2001, Research Permit Number 10002117) in South Australia, the Department of Conservation and Land Management in Western Australia (1996, License No. SF001992; 1997, License No. SF002354; 1999, License No. NE002337, and the relevant authorities in the Northern Territory (2001) and Tasmania (2002, 2004). Collections by Cassis and Schuh in New South Wales were made under permits to the Australian Museum during the employment of G. Cassis at that institution. We thank all of these agencies for their cooperation.

For the loan of specimens we thank the following institutions and their respective collections management personnel: Dave Britton (Australian Museum, Sydney), Jan Forrest (South Australian Museum, Adelaide), Terry Houston (Western Australian Museum, Perth), Tom Weir (Australian

National Insect Collection, Canberra), Mick Webb (the Natural History Museum, London).

For comments on the manuscript we thank Frederick Cherot, Gerasimos Cassis, Thomas J. Henry, Michael D. Schwartz and Christiane Weirauch.

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PLATES

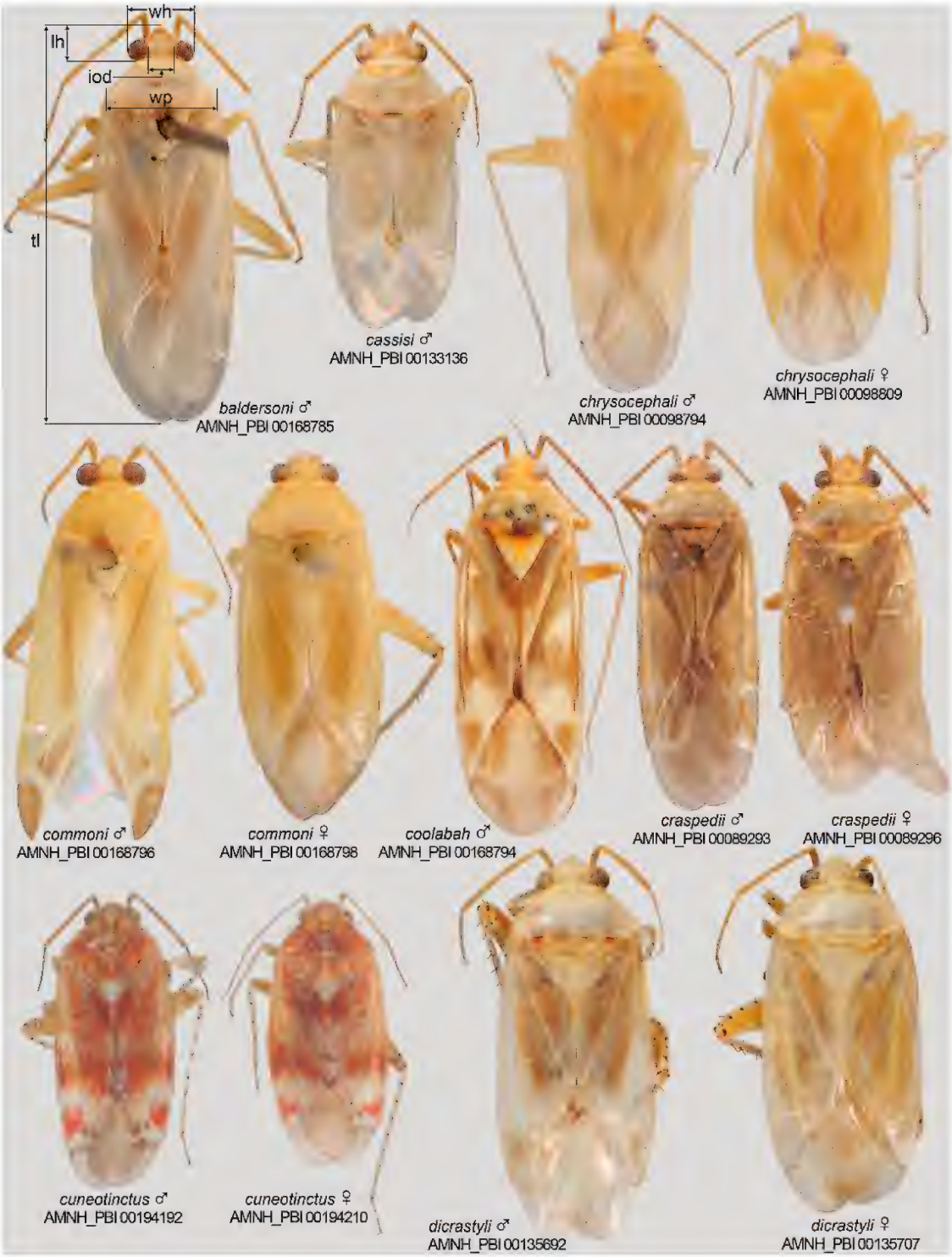

Plate 1. Habitus images of *Wallabicoris* spp.: *baldersoni–dicrastyli*. iod = interocular distance; lh = length head; tl = total length; wh = width head; wp = width pronotum.

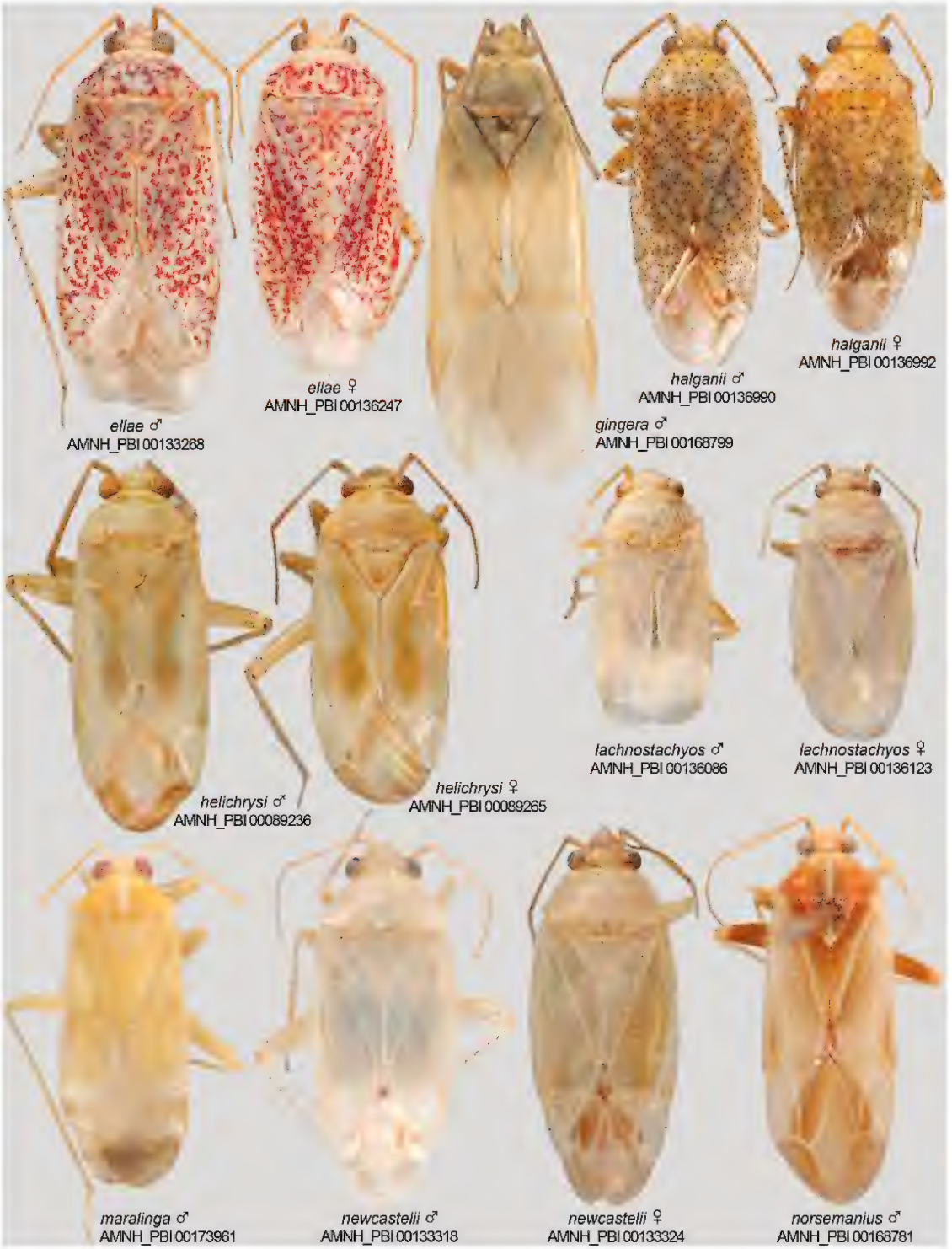

Plate 2. Habitus images of *Wallabicoris* spp. *ellae–norsemanius*.

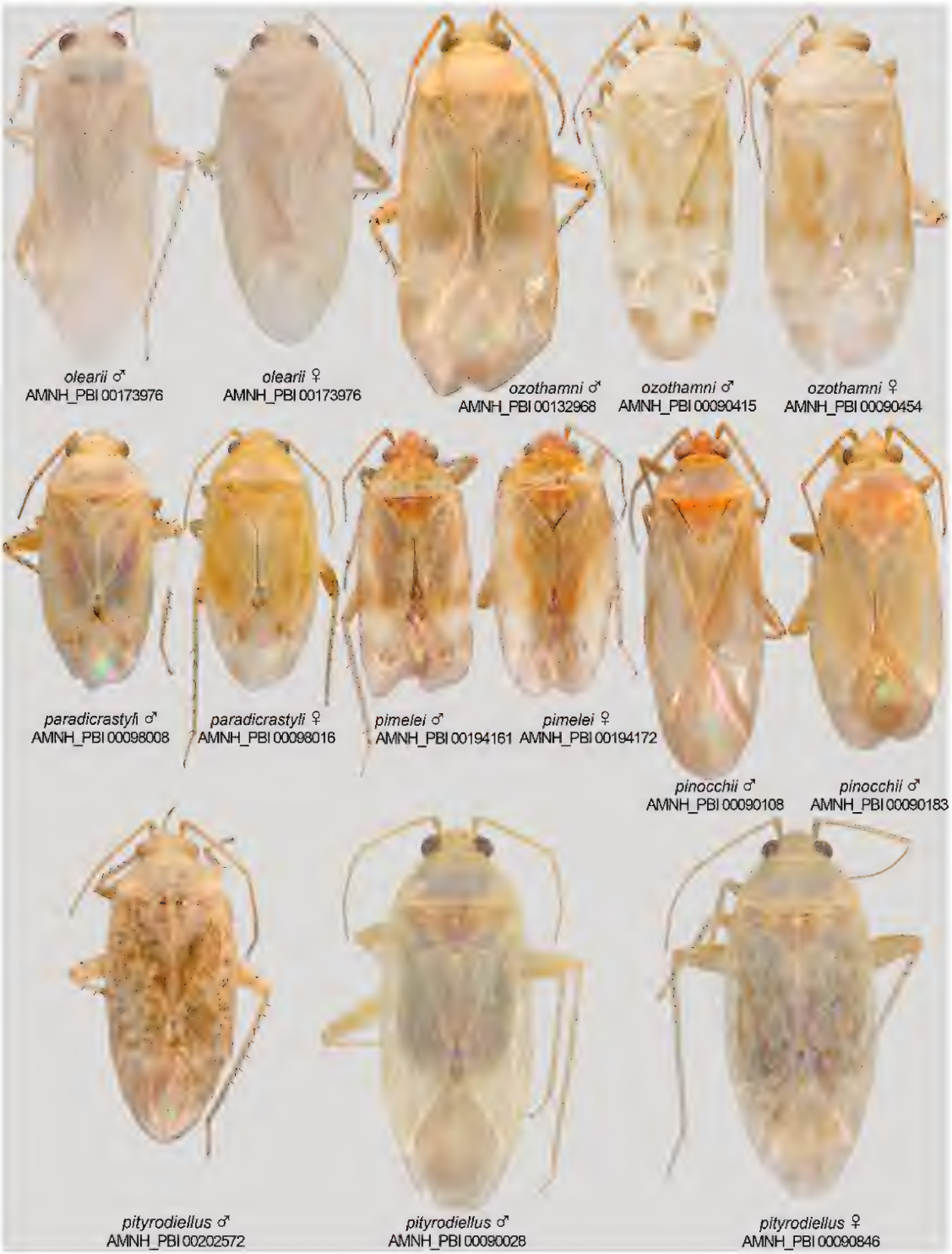

Plate 3. Habitus images of *Wallabicoris* spp.: *olearii–pityrodiellus*.

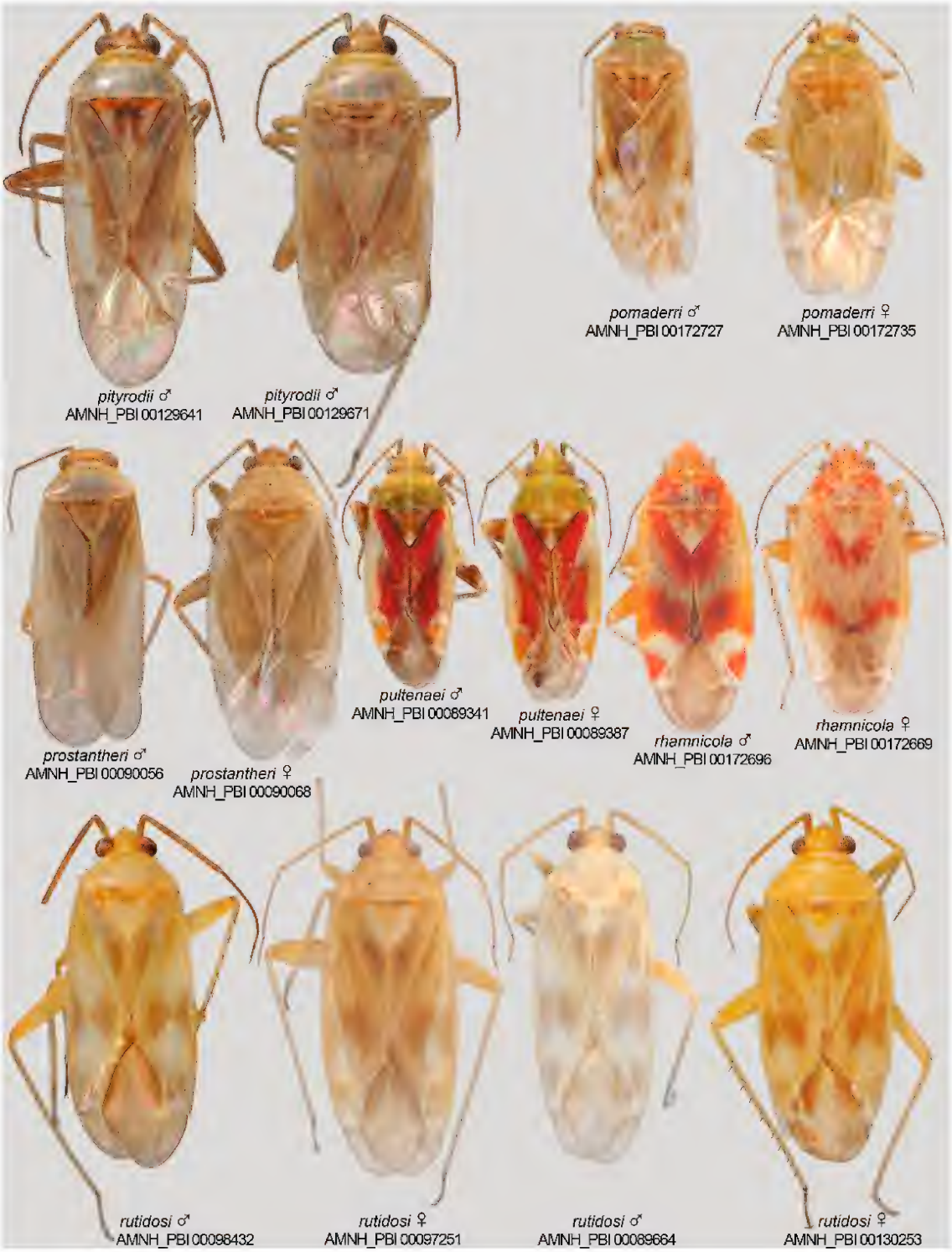

Plate 4. Habitus images of *Wallabicoris* spp.: *pityrodii–rutidosi*.

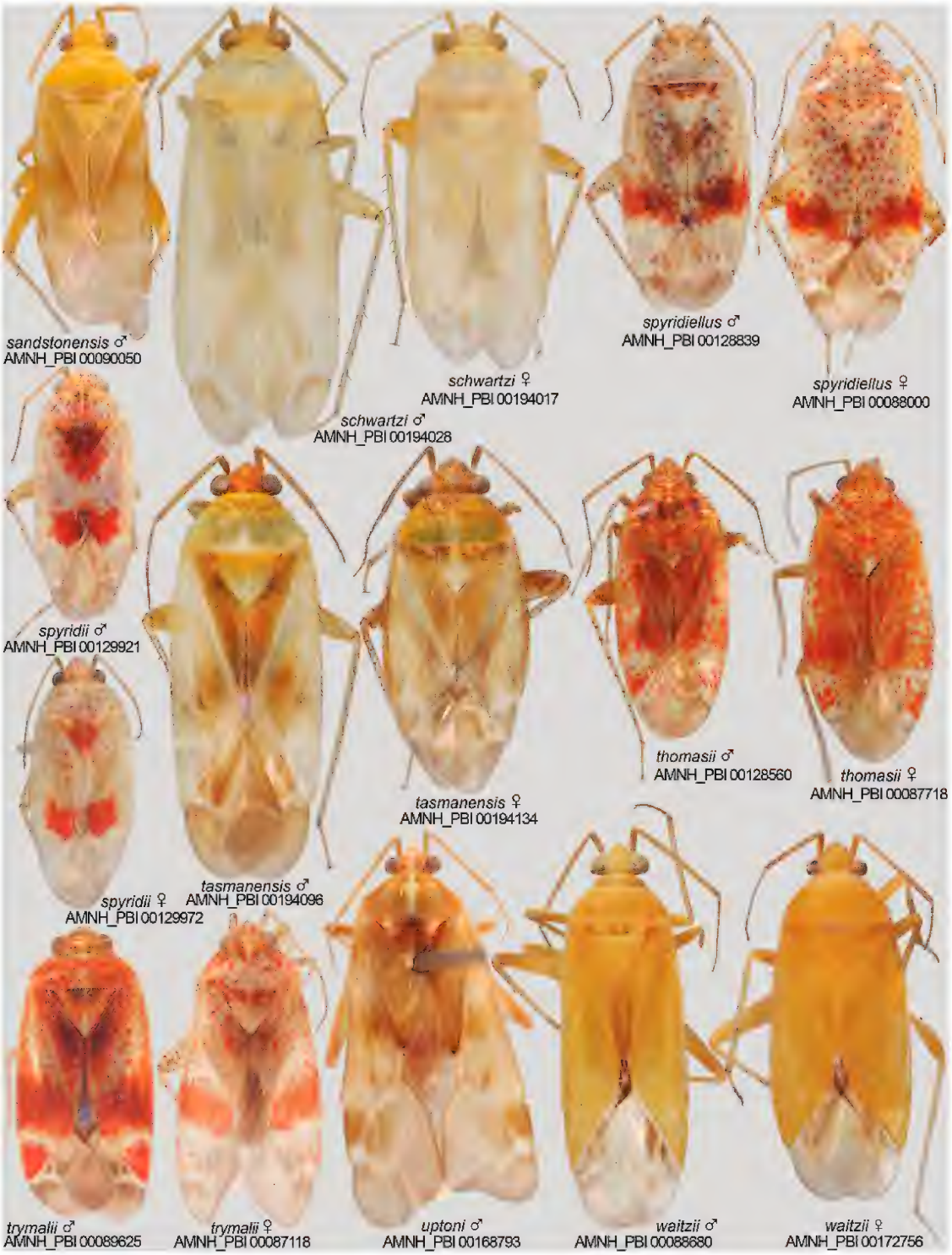

Plate 5. Habitus images of *Wallabicoris* spp.: *sandstonensis–waitzii*.

Plate 6. Asteraceae hosts of *Wallabicoris* spp. **A, B.** *Ozothamnus argophyllus*. **C, D.** *Ozothamnus hookeri*.

Plate 7. Asteraceae hosts of *Wallabicoris* spp. **A.** *Ozothamnus diosmifolius*. **B, C.** *Rutidosis helichrysoides*. **D, E.** *Waitzia acuminata*.

Plate 8. Hosts of *Wallabicoris* spp. **A.** *Pultenaea tenuifolia* (Fabaceae: Palilionoideae). **B.** *Dicrastylis flexuosa* (Lamiaceae). **C.** *Dicrastylis parvifolia* (Lamiaceae). **D.** *Dicrastylis fulva* (Lamiaceae).

Plate 9. Lamiaceae hosts of *Wallabicoris* spp. **A.** *Lachnostachys coolgardiensis*. **B.** *Newcastelia viscida*. **C.** *Prostanthera campbellii*. **D.** *Pityrodia terminalis*.

Plate 10. Lamiaceae hosts of *Wallabicoris* spp. **A, B.** *Pityrodia terminalis*. **C, D.** *Cyanostegia angustifolia*.

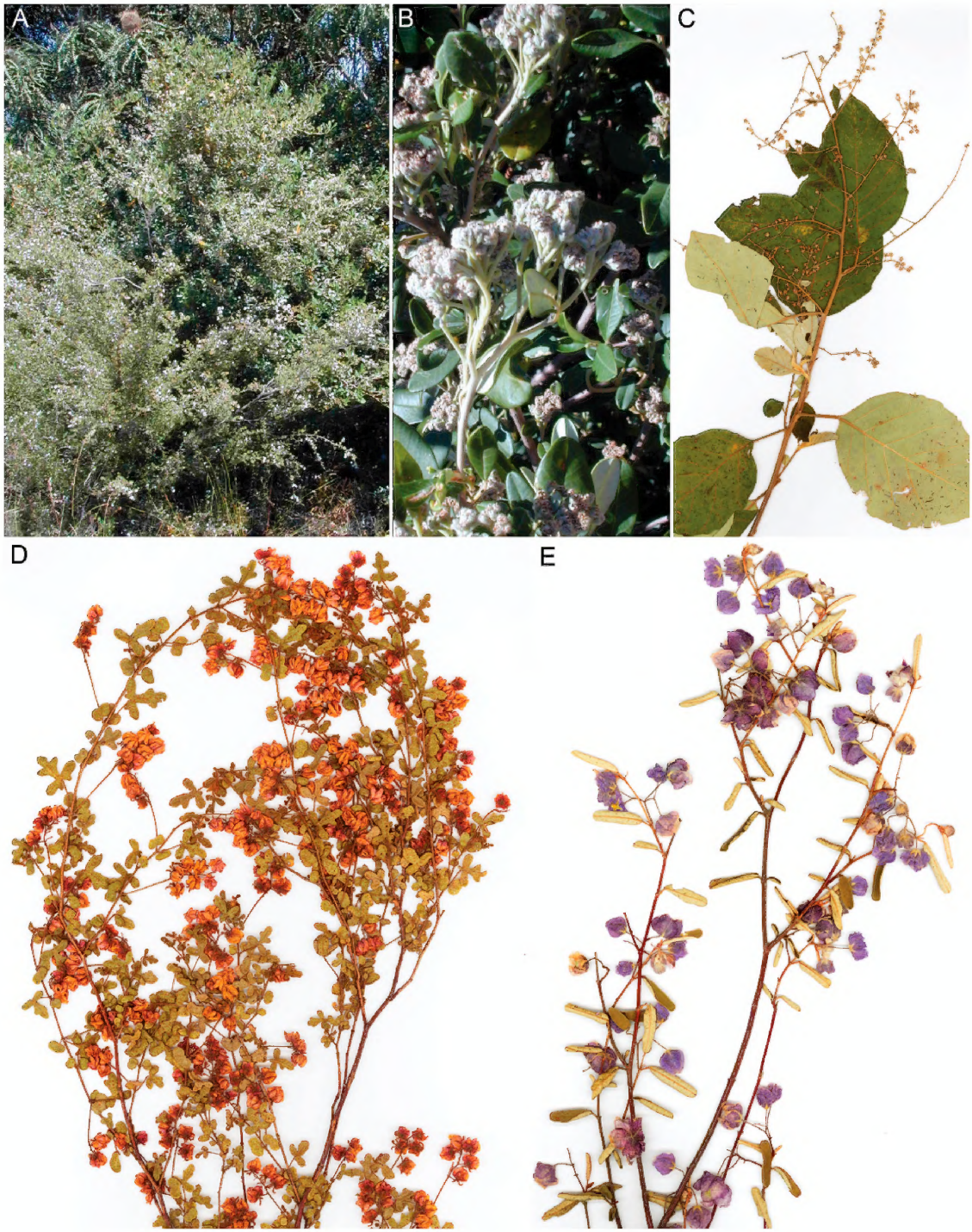

Plate 11. Hosts of *Wallabicoris* spp. **A, B.** *Spyridium globulosum* (Rhamnaceae). **C.** *Trymalium floribundum trifidum* (Rhamnaceae). **D.** *Thomasia heterophylla* (Sterculiaceae). **E.** *Keraudrenia integrifolia* (Sterculiaceae).

Plate 12. Thymelaeaceae hosts of *Wallabicoris* spp. **A, B.** *Pimelea sericea*. **C.** *Pimelea linifolia collina*. **D.** *Pimelea longiflora longiflora*. **E.** *Pimelea sylvestris*.